

M/027/006

**Continental Lime Inc.  
Modification to Plan of Operations  
Cricket Mountain Project, Utah**

**Environmental Assessment**

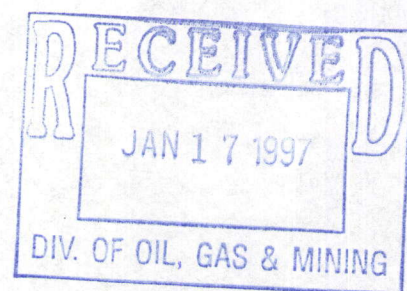
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# **Chapter 1 - Introduction**

## **Purpose and Need**

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### **1.1 Introduction**

This Environmental Assessment was prepared in compliance with the National Environmental Policy Act (NEPA) and describes the potential environmental impacts of expanding the Cricket Mountain Project for limestone mining in Millard County, Utah. The Cricket Mountain Project currently includes the Poison Mountain limestone quarry, overburden stockpiles, screened undersize material stockpiles, haul road, and ancillary facilities. Refer to Figure 1-1 for the Cricket Mountain Project location map, and Figure 1-2 which shows the project facilities land ownership of the Project area.

The expanded portion would include enlarging the undersized material stockpile, and developing the BB Dolomite Quarry and the West Quarry. Components associated with the expansion include expansion of existing haul roads, quarries, overburden disposal areas, undersize material stockpiles, soil stockpiles, and a crusher. Where possible, existing facilities would be used to minimize disturbance. The quarry operations would consist of mining high calcium limestone, crushing and sizing at the quarry, and transporting the crushed and sized limestone.

### **1.2 Purpose and Need**

The purpose of the Cricket Mountain expansion is to provide additional limestone ore to the existing processing plant. The commercial product from the processing plant is quicklime which is used for industrial and chemical purposes, such as pH control and fluxing.

The proposed expansion including the BB Dolomite Quarry and the West Quarry is needed to extend the production life of quicklime processing at the existing plant, and to add the capability to produce dolomitic quicklime.

The purpose of this Environmental Assessment is to: 1) assess the environmental impacts of CLI's proposed quarry expansion, described in the Modification to Plan of Operations and Notice of Intention to Revise Mining Operations (SRK, 1996), and determine the need for an Environmental Impact Statement (EIS) or Finding of No Significant Impact (FONSI); 2) provide interdisciplinary review and comment for proposed actions and effects on resources; 3) recommend any mitigation measures associated with the proposed Project; 4) ensure NEPA compliance; and 5) assist the BLM's Authorized Officer in the review of CLI's proposed Project.

### **1.3 Issues**

This Environmental Assessment includes a description of the affected physical and socio-cultural environment within and surrounding the proposed Project site. Data were gathered from previously released area documents, field surveys, interviews with BLM, Western Cultural Resource Management, Inc., and Intermountain Ecosystems, L.C.

### **1.4 Land Use Plan Conformance Statement**

The Cricket Mountain proposed expansion and alternatives described later in this document are in conformance with Millard County zoning ordinances and the BLM Warm Springs Resource Area (WSRA) - Resource Management Plan (RMP) (1986). Millard County has zoned the lands RF-1, open range and forestry, which allows for mining operations. Land uses within the WSRA include livestock and wildlife grazing, farming, mining, recreation, electric power transmission, and oil, gas and geothermal exploration.

### **1.5 Relationship to Statutes, Regulations, or Other Plans**

The proposed Cricket Mountain expansion and alternatives described later in this document are in conformance with Federal, State, and local laws, regulations, and plans to the maximum extent possible. Mineral operations authorized by the General Mining Laws of the United States are required to comply with the Federal Land Policy Management Act of 1976 (FLPMA) (30 U.S.C. 22 et seq.). Regulations of mineral operations under FLPMA are implemented and administered by the BLM through its surface management regulations (43 CFR 3809). In complying with FLPMA, CLI submitted the *Modification to Plan of Operations and Notice of Intention to Revise Mining Operations* (SRK, 1996).

Mining on Utah State lands is permitted under the Utah Mined Land Reclamation Act of 1975, Title 40, Chapter 8 of the Utah Code Annotated as amended (Utah Reclamation Act). The Minerals Reclamation Rules (R647-1 through R647-5) are enforced by State of



Utah, Division of Oil, Gas and Mining (UDOGM). Through a memoranda of understanding (MOU), UDOGM cooperates with the BLM to permit mining operations.

This Environmental Assessment was prepared to comply with the Council of Environmental Quality's (CEQ) regulations implementing NEPA (40 CFR 1500-1508) and BLM Regulations for Surface Mining of Public Lands (43 CFR 3809) using BLM guidelines for implementing NEPA (BLM 1988).

# Chapter 2 - Proposed Action and Alternatives

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Continental Lime Inc. (CLI) is the proponent for, and operator of, the proposed expansion described as the Modification to the Plan of Operations and Notice of Intention to revise mining Operations at the Cricket Mountain Project. The previously assigned UDOGM file number for the Cricket Mountain Project is M/027/006. The latest approved revision to M/027/006 is dated February 1992.

The owner and operator of the Project is Continental Lime Inc. and can be contacted at: Continental Lime Inc., 3950 South 700 East, Suite 301, Salt Lake City, Utah 84107; Telephone (801) 262-6876.

## 2.1 Proposed Action

The Cricket Mountain Project (Project) is an existing limestone mining and processing operation located approximately 32 miles southwest of Delta in Millard County in west-central Utah. The Project consists of a limestone quarry (Poison Mountain Quarry), overburden stockpiles, screened undersize material stockpiles, haul roads, and ancillary facilities located on patented mining claims owned by Continental Lime, Inc. (CLI), unpatented mining claims on public lands administered by the United States Department of the Interior, Bureau of Land Management (BLM), and on lands leased from the State of Utah.

Mining in the existing Poison Mountain Quarry is nearing completion. The existing Poison Mountain Quarry is located six miles west of the processing plant (Plant) in Sections 25 and 36, T21S, R10W (Figure 1-2). Although associated with the mining operations, the Plant is not considered part of the original Plan of Operations nor part of the proposed expansion. The Plant is located west of Highway 257 near Bloom Siding in

Section 36, Township 21 South (T21S), Range 9 West (R9W) and Section 1, T22S, R9W, SLBLM.

The expansion consists of the development of two distinct mining areas in the vicinity of the existing Project: the BB Dolomite Quarry and the West Quarry area. The expansion would include the development of previously undisturbed land for the quarries, overburden stockpiles, undersize material stockpiles, a crusher, and haul roads. The current operations will remain generally unchanged, with the exception of an expansion to the undersize material stockpile at the existing Poison Mountain Quarry.

The surface facilities will be located on patented mining claims owned by CLI, and unpatented mining claims located on public lands administered by the BLM. A small (less than two acre) portion of a proposed overburden disposal area will be located on a Utah State lease currently held by CLI as a part of the existing Project. No mining will occur on State lands as part of this expansion. Existing, previously permitted, mining activities will continue. Figure 1-2 shows the ownership of the proposed Project area.

Access to the existing Quarry and Plant facilities is permitted by BLM Right-of-Ways (ROW). The ROW to the existing Poison Mountain Quarry will also be used to access the facilities of the proposed expansion.

The proposed BB Dolomite Quarry would be located approximately one mile east of the Poison Mountain Quarry in Section 30 and 31 of T21S, R9W. Proposed surface disturbance related to the quarry is 102 acres, and would consist of the following components:

- Haul Road (5.8 acres);
- BB Dolomite Quarry (51.6 acres);
- Crusher Area (2.4 acres);
- Screened Ore Stockpiles (1.3 acres);
- Undersize Material Stockpile (37 acres); and
- Soil Stockpile (3.9 acres).

Figure 2-1 shows the general arrangement of the proposed BB Dolomite Quarry facilities. A summary of the Project disturbance and location of each of the BB Dolomite Quarry facilities is listed in Table 2.1.

The West Quarry area would be located in Sections 25, 26, 35 and 36, T21S, R10W; less than one mile west of the existing Poison Mountain Quarry. Proposed surface disturbance related to the West Quarry development is 190.5 acres, and would consist of the following components:

- Haul Roads (19.4 acres);
- Overburden Stockpiles (67.0 acres);
- Flat Iron Quarry (63.1 acres);
- North Lobe Quarry (33.5 acres); and
- Soil Stockpiles (5.2 acres).



**Table 2.1**  
**Summary Of Surface Disturbance By Land Status**  
**Cricket Mountain Expansion**

Facility	Location	Surface Disturbance (Acres)			
		BLM	Private	State	Total
BB Dolomite Area					
Haul Roads	S1/2SE1/4 Sec 30, NW1/4NE1/4 Sec 31, T21S, R9W	5.8	0	0	5.8
BB Dolomite Quarry	S1/2SE1/4 Sec 30, NE1/4 Sec 31, T21S, R9W	51.6	0	0	51.6
Undersize Material Stockpile	SW1/2SE1/4 S1/2 Sec 30, NW1/4NE1/4 Sec 31, T21S, R9W	37.0	0	0	37.0
Screened Stone Stockpiles	SW1/2SE1/4 Sec 30, T21S, R9W	1.3	0	0	1.3
Crusher & Misc.	SW1/2SE1/4 Sec 30, T21S, R9W	2.4	0	0	2.4
Soil Stockpile	SE1/4SW1/4 Sec 30, NE1/4NW1/4 Sec 31, T21S, R9W	3.9	0	0	3.9
Subtotal		102.0	0	0	102.0
West Quarry Area					
Haul Roads	Sec 25, E1/2 Sec 26, NE1/4NE1/4 Sec 35, T21S, R10W	8.02	11.4	0	19.4
Flat Iron Quarry	W1/4 Sec 25, E1/2 Sec 26, T21S, R10W	42.0	21.1	0	63.1
North Lobe Quarry	W1/2SW1/4 Sec 25, E1/2SE1/4 Sec 26, T21S, R10W	1.3	32.2	0	33.5
Potential North Lobe Expansion	SE1/4SE1/4 Sec 26, T21S, R10W	0.9	1.4	0	2.3 <sup>1</sup>
Overburden Disposal Area #1	S1/2NE1/4 Sec 26, T21S, R10W	19.6	6.9	0	26.5
Overburden Disposal Area #2	SW1/4 Sec 25, T21S, R10W	23.9	0	0	23.9
Overburden Disposal Area #3	S1/2SE1/4 Sec 26, T21S, R10W	8.5	1.0	0	9.5
Overburden Disposal Area #4	SW1/2SW1/4 Sec 25, SE1/2SE1/4 Sec 26, NE1/4NE1/4 Sec 35, NW1/4NW1/4 Sec 36, T21S, R10W	5.8	0	1.3	7.1
Soil Stockpile #1	SW1/2NW1/4 Sec 25, T21S, R10W	2.8	0	0	2.8
Soil Stockpile #2	NW1/2SE1/4 Sec 25, T21S, R10W	2.4	0	0	2.4
Subtotal		115.2	74.0	1.3	190.5
Existing Poison Mountain Area					
Undersize Material Stockpile	SE1/4 Sec 25, T21S, R10W	10.8	0	0	10.8 <sup>2</sup>
Total New Disturbance, Cricket Mountain Project					
Total		228.0	74.0	1.3	303.3

Figure 2-2 shows the general arrangement of the proposed West Quarry facilities. A summary of the Project disturbance and location of each facility for the West Quarry area is listed on Table 2.1.

Construction and reclamation of the haul roads to the proposed quarry areas is permitted under a BLM ROW (#U-43199BLM). Production in the BB Dolomite and West Quarry areas is planned to begin upon approval of permits.

## 2.2 Compliance with Federal and State Laws

Mining on public lands is performed under authority of the General Mining Laws of the United States. The management and use of public lands is authorized under the Federal Land Policy and Management Act of 1976 (FLPMA). FLPMA directs non-wilderness public lands under U.S. Bureau of Land Management (BLM) jurisdiction to be managed under principals of multiple use. Section 102(a)(12) of FLPMA states that "... it is the policy of the United States that the public lands be managed in a manner that recognizes the nation's need for domestic sources of minerals, food, timber, and fiber from the public lands...". FLPMA also requires the regulation of mining operations to prevent undue and unnecessary degradation of public lands. BLM regulations for compliance with the FLPMA are set forth in 43 Code of Federal Regulations (CFR) Part 3809.

Mining on Utah State lands is permitted under the Utah Mined Land Reclamation Act of 1975, Title 40, Chapter 8 of the Utah Code Annotated as amended (Utah Reclamation Act). The Minerals Reclamation Rules (R647-1 through R647-5) are enforced by UDOGM. Through a memoranda of understanding (MOU), UDOGM cooperates with the BLM to permit mining operations. The existing Project received approval of its Plan of Operations (POO) from the Warm Springs BLM Resource Area Office in Fillmore, Utah. In complying with FLPMA and various other State and Federal requirements, CLI submitted the *Modification to Plan of Operations and Notice of Intention to Revise Mining Operations* (SRK, 1996).

## 2.3 Project Disturbance

The proposed Project area outside the existing Poison Mountain Quarry is currently undisturbed with the exception of disturbance caused by exploration. Table 2.1 is a summary of disturbance related to the expansion by land status. The disturbance associated with the BB Dolomite Quarry development is estimated to be approximately 102 acres. The disturbance associated with the West Quarry area is estimated to be approximately 190.5 acres. To minimize the disturbance area, the existing undersize material stockpile near the Poison Quarry would be expanded rather than creating a new stockpile. The expansion would disturb an additional area of approximately 11 acres. Total disturbance associated with the Project expansion is estimated to be approximately 303.3 acres. Where possible, existing facilities would be used for the expansion to minimize disturbance. Other existing facilities would be reclaimed in accordance with the approved and bonded reclamation plan for the existing Quarry.

Existing disturbance associated with the Project is approximately 169 acres. This amount combined with the estimated disturbance required for the expansion totals 472.3 acres.

## 2.4 Operating Plan

Limestone would be hauled from the West Quarry area to the existing crushing facility at the Poison Mountain Quarry. A crushing facility would be placed near the BB Dolomite Quarry for crushing and screening of the dolomite from the BB Dolomite Quarry. Crushed and screened ore would be hauled from the existing and proposed crushing facilities to the existing Cricket Mountain Plant for processing.

Screened undersize material would be placed in a stockpile area near the proposed BB Dolomite Quarry. The existing limestone undersize material stockpile near the Poison Mountain Quarry would be expanded to accommodate the additional undersize material produced from the screening of the West Quarry limestone.

### 2.4.1 Site Preparation

As per BLM ROW #U-43199BLM, the access road permitted for the existing quarry will be extended to access the proposed operation as shown on Figure 2-2. Where practical and safe, soils would be stripped and salvaged from all proposed disturbance areas for use as growth media during reclamation. Where feasible, vegetation growing on areas containing salvageable soils would be removed and stored in the soil stockpiles to contribute organic matter to the soils. Site clearing would proceed in stages to minimize the amount of disturbance at any given time.

### 2.4.2 Mining Operation

Based on current knowledge of the two ore deposits, conventional bench type mining methods similar to those currently used at the Poison Mountain Quarry would be used to extract ore and overburden from the proposed quarries. Drilling and blasting would be used to break the rock, and the ore would be loaded into haul trucks with front-end loaders and transported to the crushers. Overburden would be hauled to designated areas for disposal.

Blasting would occur as needed to sustain production. Currently, blasting occurs two to three times per week and is limited to daylight hours. It is anticipated that the proposed Project would employ a similar blasting schedule.

Ore reserves in each of the proposed mining areas have been defined through exploration drilling. The size, shape and location of the proposed quarries has been determined by the location and configuration of the ore body. A description of each quarry is discussed in more detail in the subsections below.

The ore zones at both mining areas dip 19 to 22 degrees to the east, which is similar to the dip of the ore at the existing Poison Mountain Quarry. Pit design would be based on CLI's experience at the existing Poison Mountain Quarry and on surface mining industry standards. The initial benches would be established on the western side of the quarries and the deposits would be mined down-dip to the east. Benches would be developed to ensure maximum recovery of ore. Bench faces in the existing Quarry are



normally 20 feet high, catchbenches up to 60 feet wide, and mining benches 200 to 300 feet wide. It is anticipated that the proposed operation's pit geometry would be similar to that of the present approved operation with overall highwall slopes of approximately 20 degrees.

#### 2.4.2.1 BB Dolomite Quarry

The proposed BB Dolomite quarry is shown on Figure 1-1. The quarry would be roughly oblong in a northeast-southwest direction, and would extend approximately 2,500 feet in length and 1,200 feet in width. As presently planned, the proposed quarry would disturb 51.6 acres in its ultimate configuration. The natural ground levels range from 5,200 to 5,450 feet.

Approximately 8 million tons of dolomite ore would be excavated from the BB Dolomite Quarry. The ore outcrops are at natural ground level; therefore, overburden stripping would not be necessary. The footwall of the ore is exposed on the west side of the pit, approximately 15 to 20 feet below the crest. Ore which spills over the west side of the quarry during blasting and mucking would be spoiled on the slope below the quarry rim. This spoil area is included in the 51.6 acre quarry disturbance area.

#### 2.4.2.2 West Quarry Area

The Flat Iron and North Lobe Quarries are shown on Figure 2-1. The Flat Iron Quarry would be roughly lenticular in a northeast-southwest direction, and would extend approximately 3,300 feet in length and 1,100 feet in width. As presently planned, the proposed quarry would disturb 63.1 acres in its ultimate configuration. The natural ground levels range from 5,725 to 6,225 feet.

The North Lobe Quarry would be roughly lenticular in a northeast-southwest direction, and would extend approximately 2,200 feet in length and 1,100 feet in width at its widest point. As presently planned, the proposed quarry would disturb 33.5 acres in its ultimate configuration. The natural ground levels range from 5,750 to 6,025 feet.

The estimated reserves are 17.8 and 4.8 million tons of ore in the Flat Iron and North Lobe Quarries, respectively, for a total reserve of approximately 22.6 million tons of ore. Approximately 5.4 million tons of overburden would be stripped to access the ore (2.3 and 3.1 million tons in the Flat Iron and North Lobe Quarries, respectively). The average stripping ratio for the two quarries is 1:0.24, ore: waste.

Quarry production is estimated to be 220,000 tons of ore per month to meet the Plant production rate of 154,000 tons, allowing for a 30 percent undersized material loss at the crusher.

### 2.4.3 Overburden Disposal, West Quarry Area

Overburden stripping would be necessary only at the West Quarry area. Overburden in this area would be composed of limestone containing naturally occurring silica or magnesium concentrations greater than 2 to 4 percent, rendering it unsuitable for processing. The overburden would range in size from boulders 3 to 4 feet in diameter to

less than 1/4 inch material. No sulfide minerals have been identified in any of the materials to be excavated.

#### 2.4.3.1 Proposed Overburden Disposal Areas

The overburden would be broken by drilling and blasting, and hauled to designated disposal areas. The four proposed overburden disposal areas are located adjacent to the proposed quarries as shown on Figure 2-2. A summary of the elevation, capacity and area of disturbance for each disposal area is included in Table 2.2.

**Table 2.2**  
**West Quarry Area Overburden Disposal Areas**

<b>Overburden Disposal Area</b>	<b>Elevation (feet)</b>	<b>Area of Disturbance (acres)</b>	<b>Capacity (million tons)</b>
Overburden Disposal Area #1	5800 - 5930	26.5	2.58
Overburden Disposal Area #2	5650 - 5890	23.9	3.17
Overburden Disposal Area #3	5870 - 5955	9.5	0.49
Overburden Disposal Area #4	5800 - 5860	7.1	0.31
<b>TOTAL</b>		<b>67.0</b>	<b>6.55</b>

Overburden from the northern portion of the Flat Iron Quarry would be hauled to Overburden Disposal Area #1 which is located northeast of the proposed Flat Iron Quarry and has a capacity of 2.58 million tons of overburden covering approximately 26.5 acres.

Overburden from the northeast portion of the North Lobe Quarry would be hauled to Overburden Disposal Area #2 which is located northeast of the North Lobe Quarry and has a capacity of 3.17 million tons of overburden covering approximately 23.9 acres.

Overburden Disposal Area #3 has a capacity of 0.49 million tons of overburden, covering up to 9.5 acres. Overburden Disposal Area #4 has a capacity of 0.31 million tons, covering approximately 7.1 acres.

Disposal Area #3 may be mined as an extension of the North Lobe Quarry. This would increase the size of the North Lobe Quarry by approximately 7.1 acres (2.4 acres of private plus 4.7 acres of BLM surface disturbance) for a total disturbance of 40.6 acres. The overall size of the overburden disposal areas in the West Quarry area would be decreased from 67.0 acres to 57.5 acres. Disposal Area # 3 would not be developed if the North Lobe Quarry is expanded.

The waste rock dumps will be constructed in a manner similar to the presently permitted sites. Wherever feasible, the waste rock dump will be built as a terraced structure to facilitate recontouring and reclamation. Each terrace (lift) would be approximately 40 feet high and separated by 25 foot slope breaks. The lifts would be developed by end dumping from the top of the active dump face. This will create faces at angle of repose and an overall slope of approximately 2H:1V. Where practical and

feasible, the margins of the dump will be regraded to blend with the surrounding countryside.

The waste rock will consist primarily of limestone and dolomite. The upslope portion of the dump surface will be graded to control runoff. It is anticipated that material segregation during dumping will promote natural drainage of the disposal facility. Engineered diversions will be installed as necessary for erosion control at the waste rock dump area.

#### **2.4.3.2 Slope Stability**

A slope stability analysis was completed for the highest of the four overburden disposal areas using the computer program PC-STABL-5M developed at Purdue University. Overburden Disposal Area #2, the most critical of the four overburden disposal areas because of its height, was selected for the analysis.

The critical cross-section in Disposal Area #2 was evaluated under static and pseudostatic loading conditions. For the pseudostatic conditions, a horizontal earthquake acceleration of 0.10 times gravitational acceleration (0.10g) was used corresponding to Zone 2 on the Seismic Zone Map of the United States.

In the case analyzed, the critical shear surface was a shallow circular surface extending from the toe to the crest of the stacked overburden. The minimum calculated factor of safety for the static condition was 1.5. Under pseudostatic conditions, the minimum factor of safety was calculated to be 1.2. A factor of safety less than unity would theoretically represent failure. As the minimum factors of safety are greater than 1.2 for both conditions analyzed, the slopes of the overburden disposal areas would be stable when constructed as designed.

### **2.4.4 Ore Crushing and Screening**

#### **2.4.4.1 BB Dolomite Area**

A crusher located near the BB Dolomite Quarry would be used to crush and screen the dolomite to minus 2 inches by plus 3/4 inch. Crushed ore would be stockpiled in two areas near the crusher. The minus 3/4 inch dolomite will be stockpiled near the crusher. Crushed and screened ore will be hauled approximately 5 miles east to the Plant on the existing quarry access road. Stone sizes may be adjusted to meet production demands and processing equipment.

#### **2.4.4.2 West Quarry Area**

Ore from the West Quarry area would be hauled to the existing crushing and screening facilities located near the northeast end of the Poison Mountain Quarry. The single rotor impact crusher is capable of 100 percent reduction to minus six inches in the first pass. Limestone from the quarry is crushed in the impact crusher at a rate of approximately 500 tons per hour. The crushed stone is then screened on a three-deck vibrating screen. The plus two-inch stone is returned to the crusher via a belt conveyor for further reduction. The stone is screened to various sizes and either hauled to the Plant (approximately 154,000 tons/month) or stockpiled near the crusher. Material that is



minus 3/16 inch size is stockpiled in an area north of the crushing and screening facilities.

## 2.4.5 Screened Undersize Material Stockpiles

Screened undersize material would be stockpiled near both crushing and screening facilities in relatively flat areas as shown on Figures 2-1 and 2-2. When possible, undersize material would be used for road repair and maintenance, and/or kiln feed stone.

### 2.4.5.1 BB Dolomite Undersize Material Stockpile

Approximately two million tons of screened undersize dolomite material would be stored in an undersize material stockpile located south of the screened ore stockpiles and adjacent to the northwest side of the Dolomite Quarry covering approximately 37.0 acres.

### 2.4.5.2 Poison Mountain Quarry Undersize Material Stockpile

It is estimated that 2.7 million tons of limestone screened undersize material would be generated from the crushing of the West Quarry ore. To accommodate the undersize material, the existing undersize material pile would be expanded by approximately 10.8 acres. The existing undersize material pile is permitted and bonded with UDOGM under Permit No. M/027/006, revised February, 1992.

## 2.4.6 Soil Stockpiles

Soil would be salvaged from disturbed areas, where practical and safe. The soil in the rocky areas of the proposed quarries and overburden disposal areas is thin or absent and little soil can be salvaged from these areas. Six to 12 inches of soil may be available under the Overburden Disposal Area #1. Approximately 21,400 cubic yards (cy) of salvaged soil should be available for stockpiling at Soil Stockpile #1 east of Disposal Area #1 as shown on Figure 2-2. The stockpile would cover approximately 2.8 acres.

Six to eight inches of soil from the expansion of the Poison Mountain undersize material stockpile, and approximately 12 inches of soil from the haul road should be available. Approximately 20,100 cy of soil would be salvaged from these areas and stockpiled at Soil Stockpile #2 north of the proposed undersize material stockpile expansion as shown on Figure 2-2. The stockpile would cover approximately 2.4 acres.

Up to 12 inches of soil may be available from beneath the undersize material stockpile near the BB Dolomite Quarry area. The soil would be salvaged and stockpiled near the undersize material stockpiles for use during reclamation. An area suitable for the soil stockpile is west of the undersize material pile as shown on Figure 2-1. The soil stockpile would contain approximately 43,150 cy of salvaged soil covering a 3.9 acre area. Since the undersize material pile would be constructed in stages, as an alternative the soil may be stored in piles in the proposed disturbed area of the undersize material pile in advance of pile development. The stockpiled soil may be used for concurrent reclamation of the undersize material pile as each stage is completed.

show on  
MAP

## 2.4.7 Haul Roads

The haul roads in the quarry areas would be approximately 80-feet wide to safely accommodate haul trucks and meet MSHA requirements. The roads would be constructed with a 50-foot traveling width, safety berms on both road edges and drainage ditches between road edge and berms. Culverts or swales would be constructed across drainage crossings.

### 2.4.7.1 BB Dolomite Area

To access the quarry, a road would be constructed from the existing access road. The road would also be used to haul crushed and screened ore from the proposed crusher to the existing Plant. The proposed disturbance due to haul road construction within the quarry area is estimated at 5.8 acres. A large portion of the haul road would be mined out as the quarrying progresses.

### 2.4.7.2 West Quarry Area

Haul truck traffic to the West Quarry area will utilize the permitted ROW extension. All roads will be developed from the existing access road as shown on Figure 2-2. Disturbance related to quarry haul road development is estimated at 19.4 acres. Some portions of the haul roads would be mined out as the quarrying progresses.

## 2.4.8 Ancillary Facilities

### 2.4.8.1 Access Road and Project Traffic

Use of the existing quarry access road was approved in 1979 as an 80-foot ROW (U.S. BLM, 1979b) (State No. 458). Four miles of the ROW was permitted under State and Federal ROW, 2.2 miles (6.78 acres) was new road. This will be extended under a ROW revision approved 1996 to include an extension from the Poison Mountain Quarry to the West Quarry Area patented lode claims.

The crushed ore would be hauled by off highway trucks of about 110 ton capacity, from the crusher areas to the Plant on a schedule of seven days per week. The production schedules require 154,000 tons per month of crushed ore to be hauled to the Plant. This would require 64 truckloads per day.

### 2.4.8.2 Electrical Power

Electrical power for the existing Poison Mountain crusher is supplied by way of a 12 kilovolt (kV) transmission line which runs along the access road. The proposed crushing area at the BB Dolomite area would be located adjacent to the access road. Power for the crusher at the BB Dolomite area would be supplied from existing on-site power or a by a diesel generator. A ROW for electrical power lines in Section 36, T21S, R9W is permitted under State Special Use Lease No. 458.

### 2.4.8.3 Water Supply

An existing well drilled on State land near the Plant currently supplies water via truck for the mining operations as well as for the processing facilities. Water use associated with the mining operations is generally limited to dust control on the access road, haul roads and disturbed areas, and during drilling and crushing operations.

The increased production associated with the expansion would slightly increase water needs for the mining operations; however, it is anticipated that the existing well production will be sufficient to meet the water needs.

### 2.4.8.4 Equipment Requirements

Equipment requirements would be similar to those of the existing operations. A list of the anticipated equipment requirements is provided in Table 2.3. The specific equipment requirements may be modified over time.

**TABLE 2.3**  
**TYPICAL EQUIPMENT REQUIREMENTS FOR THE**  
**CRICKET MOUNTAIN EXPANSION**

<i>Equipment Type</i>	<i>Estimated Requirements</i>
<b>Mining</b>	
Haul Trucks	4 - 5
Loader, 7-cubic yard	1
Loader, 10 yard	1
Rotary Blasthole Drill Rig	1 - 2
Air Track Drill	2
D-8 Dozer	1
Water Truck, 3,000 gal	1
Water Truck, 10,000 gal	1
14-Foot Motor Grader	1
1 Ton Support Vehicles	2
2 ½ / 5 Ton Explosives Vehicle	1
Crew Cab-Type Vehicle	1

### 2.4.9 Project Work Force

The current workforce for the Project is approximately 50 people. With the increased production, the workforce is anticipated to increase to approximately 70 people.

## **2.5 Operating Practices**

### **2.5.1 Soil Salvage and Storage**

Soil would be salvaged from all disturbed areas, where practical and safe. The amount of soil on the proposed disturbed areas varies; thin to absent in the steep and rocky areas and thicker in the flatter areas of the sites. The feasibility of salvage efforts would be determined by the thickness and amount of area covered by the soil. Small isolated pockets of soil would not be salvaged.

Following stripping, soil would be stockpiled in the locations shown on Figures 2-1 and 2-2. The stockpiles would be contoured to minimize wind erosion, and revegetated with the interim seed mix approved by UDOGM. Signs would be posted to prevent disturbance to the stockpiles.

### **2.5.2 Blasting**

Currently, an explosives magazine and a cap magazine for the Poison Mountain Quarry are located south of the crushing and screening facilities near the base of Poison Mountain. The magazines would remain in place for use during the West Quarry and BB Dolomite operations.

Typically, ammonium nitrate and fuel oil (ANFO) would be used as blasting agents with other agents used depending on conditions. Blasting agents would be stored in compliance with applicable Bureau of Alcohol Tobacco and Firearms (BATF) and Mine Safety and Health Administration (MSHA) regulations.

### **2.5.3 Fuel Storage and Use**

Diesel fuel and gasoline are stored in above ground tanks near the crushing and screening facilities at the Poison Mountain Quarry. The tanks are installed on concrete pads and surrounded by concrete berms to contain leaks, spills or ruptures of the tanks. Oil is stored inside a containment area within a building. These facilities would be used for the West Quarry and BB Dolomite operations.

### **2.5.4 Sanitary and Solid Waste Disposal**

Portable toilets would be used for sanitary waste at the proposed mining areas. The toilets would be serviced by a licensed contractor. More permanent facilities may be constructed at the crusher area.

Used tires, scrap lumber, etc. would be stored in very small "bone yards" near each quarry area. No toxic or hazardous materials would be stored in these areas. All materials would be removed at closure and disposed of in an approved landfill.

### **2.5.5 Safety and Site Control**

The Project would be permitted as a mining operation and would operate in conformance with applicable MSHA safety regulations (30 CFR 1-199). The access road to the proposed quarry areas passes through the Plant site which operates 24 hours per

day, seven days per week. Access along the road is restricted to employees and authorized visitors.

Signs describing access restriction to the site would be placed around the site; and access to the highwall areas would be restricted by physical barriers such as, but not limited to, rock berms or barricades. Rock berms would be constructed of available quarry reject material(s). The berms will be of sufficient size and configuration to restrict vehicular access to the highwalls.

### **2.5.6 Erosion and Sediment Control**

Best Management Practices (BMPs) would be used to limit erosion and reduce sediment in precipitation runoff from Project facilities and disturbed areas during construction and operations. BMPs may include, but are not limited to, straw bale sediment traps, diversion ditches, and rock and gravel cover. Vegetation would be used as a cover to reduce the potential for wind and water erosion. Following construction activities, areas such as cut and fill embankments and soil stockpiles would be seeded as soon as practical and safe.

All sediment and erosion control measures would be visually inspected periodically. Maintenance would occur on a regular basis and repairs performed immediately as needed.

### **2.5.7 Emission Control**

Methods for controlling dust are specified in the air quality permit. Water application with the use of a water truck would be the primary method of dust suppression on haul roads. Dust at the crushing and screening facilities, and dry drilling activity, would be controlled by both water sprays and dust collection: a baghouse at the crushing and screening facility and air vacuum dust collection for the drills. A chemical dust suppressant would be applied to the access and haul roads at intervals specified in the air quality permit. Where practical, interim revegetation would occur on disturbed areas to minimize unvegetated surfaces.

Combustion emissions would be controlled by the pollution control devices installed by equipment manufacturers. Engines would be kept in tune through a regular preventive maintenance program.

### **2.5.8 Concurrent Reclamation**

Concurrent reclamation reduces erosion, provides early impact mitigation and reduces final reclamation work. Concurrent reclamation would occur in areas where activities are discontinued and are no longer active parts of the operation.

## 2.6 Reclamation and Closure

### 2.6.1 Introduction

Reclamation of disturbance resulting from the proposed expansion in the West Quarry and BB Dolomite areas would be completed in accordance with Federal and State regulations. The Utah Mined Land Reclamation Act of 1975, Title 40, Chapter 8 of the Utah Code Annotated states that "Mined land should be reclaimed so as to prevent conditions detrimental to the general safety and welfare of the citizens of this state and to provide for the subsequent use of the lands affected" (40-8-2).

Reclamation and closure of the proposed disturbed areas would be similar to that of the Poison Mountain mine area. The Poison Mountain reclamation plan has been developed with input from UDOGM and BLM and has been refined based on site specific operating experience over the life of the Project. The most recent revision of the Poison Mountain reclamation plan, M/027/006, is dated February, 1992 (Krohn, 1992). It is anticipated that reclamation and closure planning for the West Quarry and BB Dolomite areas would be an ongoing process based on CLI's continuing experience at the Poison Mountain Quarry and at other operations.

The following subsections present a discussion of conceptual reclamation and closure of the West Quarry and BB Dolomite areas.

### 2.6.2 Land Uses

Major land uses occurring in the Project area include mining, wildlife habitat, grazing and, to a lesser degree, recreation. Following closure, the Project area would continue to support the same land uses.

All post-closure land uses are in conformance with the BLM WSRA Management Plan and Millard County zoning ordinances.

### 2.6.3 Reclamation Goals and Objectives

The Project site would be stabilized, to the extent practicable, to minimize future impact to the environment and protect air and water resources. The objectives of the BB Dolomite and West Quarry reclamation programs are as follows:

- To minimize erosion damage and protect surface water resources through careful control of water runoff.
- To establish surface soil conditions conducive to the regeneration of a stable plant community through stripping, stockpiling and reapplication of soil material or screened undersize limestone and dolomite material.
- To revegetate disturbed areas with a diverse mixture of plant species in order to establish long-term productive plant communities compatible with existing land uses.
- To maintain public safety by stabilizing or limiting access to land forms that could constitute a public hazard.



## 2.6.4 Summary of Disturbance

The disturbance related to the proposed Project expansion is summarized in Table 2.1. The areas to be disturbed comprise the following major mine components: quarries, overburden disposal areas, undersize material stockpiles, and roads. It is anticipated that, with the exception of stable highwall areas in the quarries, which would be constructed in bedrock material, and the slopes of the overburden disposal areas, most facilities would be reclaimed and revegetated.

## 2.6.5 Site Specific Closure and Reclamation

### 2.6.5.1 Quarries

The limestone and dolomite is composed of bedrock material that forms cliffs in the surrounding area. Based on experience at the Poison Mountain Quarry, and natural topographic features in the area, it is anticipated that the highwalls constructed in competent limestone would retain their near vertical faces following closure. The highwalls would be left in place providing nesting for birds. The slopes of visibly unstable areas or areas showing significant deterioration would be managed through selective blasting or other methods to mitigate safety hazards. As salvageable soil in the Project area is very limited, quarry benches would not be reclaimed. Berms or other measures would be used above the highwalls to prevent access to the highwall slopes. These safety measures would be constructed as the final uppermost benches are mined out. The access to benches no longer being used would also be restricted.

### 2.6.5.2 Overburden Disposal Areas

Overburden disposal areas would be constructed on lifts approximately 40 feet high offset by benches approximately 25 feet wide. As salvageable soil in the Project area is limited, the overburden disposal terrace faces would be left at angle of repose and only the benches and tops would be covered with a layer of soil and seeded.

### 2.6.5.3 Crushing and Screening Facilities

The crushing and screening facilities at the BB Dolomite area would be removed following the completion of mining activities in the quarry. The area disturbed by the facilities and the screened ore stockpiles would be regraded, if necessary, scarified and reseeded.

The existing crushing and screening facilities at Poison Mountain would remain in place until all reserves have been mined. At that time, the facilities would be dismantled and removed. Concrete foundations would either be removed and disposed of in the overburden disposal areas or would be covered during regrading of the site. The area would be regraded, if necessary, scarified and seeded.

### 2.6.5.4 Screened Undersize Material Stockpiles

The screened undersize stockpiles at the BB Dolomite Quarry and Poison Mountain are sized to contain all screened undersize material produced during quarry operations.

Some of the screened undersize material would be used for road repair and maintenance, and/or for kiln feed stone. Therefore, the stockpiles may be smaller at closure.

The terrace faces of the screened undersize material stockpile at the BB Dolomite Quarry would be regraded to 3H:1V. The stockpile would be covered with a four to seven inch layer of growth medium (or as determined by the test plots) and seeded.

The Poison Mountain undersize material stockpile expansion would be constructed in a stable configuration with lifts offset by benches. At closure the slopes of the stockpile would remain in their present design to minimize the potential for blocking the stream channel to the north. The top and terraces of the stockpile would be covered with a four to six inch layer of growth medium and seeded.

#### 2.6.5.5 Roads

UDOGM and BLM have agreed to leave the access road from the first switchback in the Poison Mountain Quarry to the Plant following closure in a variance dated August 4, 1989 (UDOGM 1989). The reclamation of the access road is permitted separately under BLM ROW #U-43199BLM.

The majority of the quarry haul roads would be regraded, compacted surfaces ripped to a depth of 12 inches, covered with a four to seven inch layer of soil and seeded. If soil resources are unavailable for reclamation of roads, haul roads in the West Quarry area would not be covered with soil prior to seeding. Access into the quarry areas would be restricted by grading and/or rock barricades; however, haul roads in the quarry area would not be reclaimed.

NOT  
RECLAIMED

#### 2.6.5.6 Ancillary Facilities

The existing quarry office at the Poison Mountain Quarry would be used for operations at the West Quarry and BB Dolomite areas. The office would remain following closure of the West Quarry and BB Dolomite areas only if additional reserves are to be developed in the surrounding area. Once all reserves are depleted, the quarry office would be dismantled and removed from the property.

The explosive and cap magazines would also remain in place until all reserves are developed. Following removal, reclamation of these areas would proceed as soon as practicable.

All existing drill holes have been plugged in accordance with UDOGM rule R647-4-108. Any new development holes would be plugged in accordance with UDOGM rules as well.

### 2.6.6 Soil Balance

A preliminary soil balance has been prepared to compare the soil quantities required for reclamation of the West Quarry and BB Dolomite area components to the quantities of soil available. For the soil balance, the following assumptions were used:

- soil would not be borrowed or imported from off-site sources;

- the quarries would not be reclaimed;
- portions of haul roads that extend into the quarries would not be reclaimed;
- overburden disposal area terrace faces would be left at angle of repose and would not be reclaimed;
- overburden disposal area terraces would not be reclaimed; and
- where necessary, an average depth of four to seven inches of growth medium would be placed on all remaining Project components to be reclaimed.

The results of the preliminary soil balance indicate that there is sufficient soil available in the West Quarry area to cover the tops of the overburden rock disposal areas at a depth of four inches, and the top and terraces of the undersize material stockpile near the Poison Mountain Quarry at a depth of four to six inches. Sufficient soil should be available in the BB Dolomite Soil Stockpile to cover all components in the Dolomite area at a depth of seven inches. Actual soil quantities that would be available would be determined during Project development, and may differ somewhat from the preliminary estimates.

## **2.6.7 Revegetation**

### **2.6.7.1 *Experimental Revegetation Program***

CLI is currently conducting revegetation test plots at the Poison Mountain Project. As part of the reclamation plan, CLI may conduct additional revegetation test programs to determine the most effective methods to meet revegetation standards as defined in their reclamation plan. The program would be flexible enough to allow modifications of proposed methodologies and to test new techniques. Conceptually, the test revegetation program would include test plots designed to evaluate different types and thicknesses of cover material, seed mixes, planting techniques, soil amendments and mulches. The program may also include test plots on slopes of different grades and aspects. CLI intends to report the results of regular test plot monitoring in the Annual Report submitted to UDOGM.

In addition, CLI intends to optimize the amount of concurrent reclamation at the site. This would allow larger-scale testing of regrading, reclamation cover placement and revegetation techniques. It is anticipated that some of the overburden disposal areas would be completed prior to completion of mining, which would allow for concurrent reclamation of these areas.

### **2.6.7.2 *Seed Mixtures***

The seed mixtures to be used would be determined by commercial seed availability and the reclamation success of the Poison Mountain area. The seed mix used in the Poison Mountain test plots was recommended by a representative of Soil Conservation Service and amended by UDOGM and is as shown in Table 2.4.

**Table 2.4**  
**Proposed Reclamation Seed Mix**

<b>Common Name</b>	<b>Percent PLS</b>	<b>lbs PLS in 12lbs/ac basis</b>
'Hycrest' crested wheat grass	12	1.44
Luna pubescent wheat grass	24	2.88
Bozoisky Russian wildrye	24	2.88
Koshia Prostrata	4	0.48
Yellow sweetclover	12	1.44
Shadscale	12	1.44
4-wing saltbrush	12	1.44

#### **2.6.7.3 Mulching and Fertilization**

Mulching and other amendment requirements would be based on the experimental revegetation program and the reclamation experience obtained from reclamation of the Poison Mountain area. Mulch would be applied to the seeded areas, if determined by the test revegetation program to be appropriate. Weed-free straw or hay, alfalfa pellets or wood chips are some of the common mulching materials. The choice of mulching materials would be defined by the test revegetation program and local availability.

Necessary soil amendments, as determined by the test revegetation program, would be applied to the cover material as it is spread, or applied following spreading and then incorporated by harrowing or disking. The top surface of the cover material would be left in a rough state and further roughened by dozer tracking as necessary to create microenvironments amenable to seed germination and plant growth.

#### **2.6.7.4 Seeding and Planting**

Seeding methods to be utilized at the site would depend on many factors including the topography, soil conditions and seed mixture. Typically, some combination of broadcast seeding, drill seeding and hydroseeding is used for mine reclamation. It is expected that broadcast seeding, followed by harrowing to bury the seed to the proper depth would be the seeding method of choice. The presence of larger rocks and boulders in the soil materials to be used as reclamation cover would decrease the effectiveness of drill seeding and may preclude this method altogether. Hydroseeding may be used on steep, small areas where larger equipment cannot easily operate.

Seeding would take place in the fall or early spring. In the event seeding is delayed, the compacted soil areas may require ripping or scarification. If determined necessary, compacted soils would be ripped or scarified to the maximum depth allowed by the available equipment prior to seeding. Following seeding the soil will be left in a roughened condition to facilitate growth of the seed mix.

## 2.6.8 Reclamation Schedule

Regrading and reclamation would take place in all areas permanently decommissioned prior to final closure. Reseeding would be performed in the fall, or if necessary in the early spring.

## 2.6.9 Monitoring

Monitoring would be conducted to check revegetation success and erosion control and would take place periodically during the growing season and following extreme storm events.

Revegetation success would be determined by monitoring the amount of ground cover, and comparing this value to one or more reference areas. Revegetation shall be considered accomplished as per UDOGM Mineral Reclamation Rules (R-647-4) when the revegetation has achieved 70 percent of the vegetation cover in the reference area. The survival of the vegetation for three growing seasons following seeding would be the time criteria for defining revegetation success.

## 2.6.10 Concurrent Reclamation

Given the nature of the mining operation, and the fact that mine plans will change as the ore geometry is defined by excavation, a detailed concurrent reclamation summary is not possible. Some of the Project facilities or portions of Project facilities would be decommissioned prior to final mine closure. These areas would be reclaimed concurrently with the active quarry operations.

Concurrent final reclamation would take place on the overburden disposal areas as soon as practical and safe after overburden stripping is complete. Portions of quarry haul roads external to the quarries and no longer required would also be reclaimed. Areas disturbed by soil stockpiles would be reclaimed after the soil is used in reclamation of the above areas.

## 2.6.11 Interim Reclamation

In the event that continuous, full-scale production is interrupted due to economic considerations or unforeseen circumstances, interim reclamation may be initiated. Interim reclamation is outlined below:

- *Power Lines:* The power line to the crushing and screening facilities would be inspected regularly and maintained as necessary.
- *Roads:* The main access road would receive regular maintenance. The quarry haul roads would receive daily maintenance. Maintenance of the access road would continue in accordance with the conditions of the approved ROW.
- *Quarries:* Berms would be placed to help restrict access to highwall areas.
- *Erosion Control Measures:* All erosion control measures and BMPs would be regularly inspected and maintained.

- **Buildings:** All building, equipment and support facilities would be protected from public access and maintained as necessary.

## **2.6.12 Bonding Requirements**

Under 43 CFR 3809, all mining operations conducted under an approved POO are required to post a bond. UDOGM also requires operators to provide a reclamation surety to the State. A bond in the amount of \$330,400 covering disturbance related to the quarry, is currently held jointly by UDOGM and the BLM for the Project. A bond in the amount of \$5,000 is also held by the Utah Division of Lands and Forestry. Reclamation costs for the proposed expansion be estimated and presented in the Project Reclamation Plan. The costs would be reviewed and the bond amount adjusted to conform to the proposed expansion.

## **2.6.13 Alternative**

### ***2.6.13.1 No Action Alternative***

Under the No-Action Alternative, the proposed action would not be approved. However, the No-Action Alternative would not allow CLI to develop the existing limestone reserves in the area and extend the lifespan of the existing processing Plant.



# Chapter 3 - Affected Environment

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## 3.1 Introduction

The Cricket Mountain Project (Project) is an existing limestone mining operation. The proposed expansion consists of the development of two distinct mining areas in the vicinity of the existing operations: the BB Dolomite Quarry and the West Quarry area.

The existing Project and proposed expansion are located in the Cricket Mountains of the Warm Springs Resource Area (WSRA), which is in the Richfield District and covers the southern two-thirds of Millard County in west-central Utah. The WSRA is characterized by broad arid valleys between relatively small mountain ranges which rise steeply from the Great Basin valley floor.

The following section describes the existing environment at the Project site. This section also describes all resource and sociocultural values which could be affected by the proposed Project or alternative.

The following critical elements of the human environment are not present or are not affected by the proposed action or alternative in this environmental assessment (EA):

- Floodplains
- Wild and Scenic Rivers
- Wetlands, Riparian Zones
- Farm Lands (prime or unique)
- Areas of Critical Environmental Concern
- Forestry

Bureau of Land Management (BLM) specialists in conjunction with Steffen, Robertson and Kirsten, Inc. (SRK) have further determined that the following resources, although present in the Project area, are not affected by the proposed action:

- **Wilderness:** There are five wilderness study areas (WSA's) within the Warm Springs Resource Area (WSRA), namely: Wah Wah Mountains, King Top, Notch Peak, Conger Mountain, and Howell Peak. The Project area in the Cricket Mountains is a minimum of 25 miles from any of these WSA's. The Tabernacle Hill Lava Field is the only area currently designated as a Special Recreation Management Area (SMRA) within the WSRA, and is approximately 20 miles from the Project area. There would be no impact of the proposed expansion on the wilderness areas within the WSRA.
- **Livestock Grazing/Range:** There are 63 grazing allotments in the WSRA encompassing 2,056,830 acres or 92 percent of the public land acres. The proposed expansion falls within the Cricket Allotment (Allotment 5779) which is 90,205 acres in size. The Cricket Allotment has 8,294 animal months (AUMs) of livestock grazing use that can be licensed for sheep, 64 AUMs for antelope forage use and 6 AUMs for deer use (Figure 3-2). Approximately 6,000 sheep are grazed on the allotment from October 15 to April 30 of each year. The construction and operation of the proposed expansion would reduce the area available for livestock grazing/range. The Project disturbance would be approximately 206 acres consisting of 132.6 acres on BLM administered land, 70.4 acres on Continental-owned land, and 2.7 acres on State owned land. Therefore, Allotment 5779 would be reduced by approximately 0.23% which would not constitute a significant impact on current grazing patterns.
- **Wild Horse and Burro:** The WSRA contains three complete herd management areas (HMA's) : Conger Mountain, King Top, and the Burbank Hills. The Project area in the Cricket Mountains is a minimum of 25 miles from any of these HMA's. There would be no impact of the proposed expansion on the wild horse herds within the WSRA.

The following resources are present in the area and are brought forward for analysis.

### 3.1.1 Lands

#### 3.1.1.1 Location

The existing Project is located approximately 32 miles southwest of Delta in Millard County in west-central Utah.

The existing limestone quarry (Poison Mountain Quarry) is located six miles west of Highway 257 near Bloom Siding in Sections 25 and 36, T21S, R10W.

The proposed expansion consists of the development of two distinct mining areas in the vicinity of the existing Poison Mountain operations: the BB Dolomite Quarry and the West Quarry area. The proposed BB Dolomite Quarry is located approximately one mile east of the Poison Mountain Quarry in Section 30 and 31 of T21S, R9W. The West

Quarry area is located less than one mile west of the existing Poison Mountain Quarry in Sections 25, 26, 35 and 36, T21S, R10W.

#### **3.1.1.2 Access**

Access to the existing Poison Mountain Quarry and Plant facilities is permitted under a BLM ROW (#U-43199BLM) and State Lease No. 458. The ROW to the existing Quarry would also be used to access the facilities of the proposed expansion (Figure 1-2).

#### **3.1.1.3 Ownership**

The existing Project is located on patented mining claims owned by Continental Lime, Inc. (CLI), on lands leased from the State of Utah, and on unpatented mining claims on public lands administered by the United States Department of the Interior, Richfield District Bureau of Land Management (BLM).

The proposed quarries and surface facilities would be located mainly on patented and unpatented mining claims within public lands administered by the BLM. A small (less than two acre) portion of a proposed overburden disposal area would be located on a Utah State lease currently held by CLI as a part of the Poison Mountain Operation. Under the proposed expansion, no mining would occur on State lands. Refer to Figure 1-2 which shows land ownership in the proposed Project area.

#### **3.1.1.4 Land Use and Recreation**

Millard County has zoned the lands RF-1, open range and forestry, which allows for mining and related operations. Land uses within the WSRA include livestock grazing, farming, mining, recreation, electric power transmission, and oil gas and geothermal exploration.

The main types of recreation in the Project area are hunting and off-road vehicle use. The hunting opportunities in the Project area include antelope, mule deer and chukar partridge. Other recreational uses in the WSRA include camping, horseback riding, hiking, rockhounding and sightseeing. In general, recreational use is low due to the low population in the area, and lack of development and publicity.

### **3.1.2 Topography and Soils**

#### **3.1.2.1 Topography**

The Cricket Mountain Project is located within the Basin and Range Physiographic Province which is characterized by north-south trending, blockfaulted mountain ranges, and arid sedimentary basins. The existing Project lies to the east of Poison Mountain which is an extension of the Cricket Mountain Range. The proposed West Quarry area lies in a hilly area with numerous small cliffs and talus slopes between the east flank of the Cricket Mountains and Poison Mountain. The elevation of the West Quarry area ranges from 5,700 to 6,250 feet. The BB Dolomite Quarry area is a small isolated hill which was a part of Poison Mountain. The elevation in this area ranges from 5,200 to 5,450 feet.

### 3.1.2.2 Soils

Two general soil types occur in the proposed expansion areas: Amtoft-Amtoft, very shallow-Lodar families association and Dera-Dera sandy loam families association (Figure 3-5).

The Amtoft-Amtoft, very shallow-Lodar families association (Amtoft-Lodar) are shallow soils located on ridges, mountainsides and hillsides at elevations from 4,800 to 7,000 feet. The thickness of the soils ranges from 10 to 18 inches. The soils are composed of very pale brown loams that are extremely stony to very stony, extremely gravelly to very gravelly, or very cobbly. The vegetation supported by the soils include Utah juniper, littleleaf mountain mahogany, pinyon, black sagebrush, rabbitbrush, Nevada bluegrass and bluebunch wheatgrass. The general management concerns for the Amtoft-Lodar soils include suitability for seeding due to low precipitation, depth to bedrock, slope and low water holding capacity.

The Dera-Dera sandy loam families association (Dera) are shallow to very deep, well drained, gently sloping to strongly sloping soils found on alluvial fans and bajadas at elevations of 4,300 to 5,800 feet. The soils are up to 60 inches thick. The soils are composed of very pale brown gravelly to very gravelly loams and sandy loams. Present vegetation supported by the soils include shadescale, galleta, spiny horsebrush, winterfat, Indian ricegrass, sand dropseed and bud sagebrush. The general management concerns for the Dera soils is the suitability for seeding due to low precipitation and low available water capacity.

The Amtoft-Lodar soils occur in all areas of the West Quarry area and in the proposed BB Dolomite quarry area. The Dera soils are found under portions of the access road to the West Quarry area, under the proposed undersize material stockpile near the BB Dolomite quarry, and under portions of the new undersize material stockpile at the existing Poison Mountain Quarry.

Soil erosion in the area is caused by wind and high water flows during spring runoff and intense summer thunderstorms. Due to the low precipitation, loose soil and sparse vegetation, wind is the primary cause of soil erosion in the region. The erosion classification is slight to moderate in the West Quarry area and moderate in the BB Dolomite Quarry area.

## 3.1.3 Geology, Paleontology and Seismicity

### 3.1.3.1 Geology

The Cricket Mountains are composed primarily of sedimentary strata dissected by north-trending normal faults. The strata dip 15-20 degrees to the east, exposing stratigraphically younger rocks on the east side of the range in the vicinity of the Project area.

The limestone and dolomite ore in the Project area are located in Middle Cambrian rocks. The limestone of the Cricket Mountains can be defined as all the strata between the base of the Lower Member of the Trippe Limestone and the top of the Whirlwind

Formation. The stratigraphic units of economic interest are listed below in descending chronostratigraphic order:

Trippe Limestone - The Lower Member of the Trippe Limestone is exposed on the east flank of the BB Dolomite Quarry ridge. The Lower Member is a dark-gray, ledge-forming limestone; and light gray to white, slope-forming dolomitic boundstone.

Limestone of Cricket Mountains - Mostly dark-gray, clayey, and silty limestone. It is commonly mottled with irregular nodules of brownish-gray limey dolomite. In the Poison Mountain area the lower 700 feet of the formation consists of medium to dark-gray lime mudstone that forms ledge and slope topography. This is overlain by 300 feet of light brownish gray cliff-forming dolomite. The dolomite is overlain by dark gray limestones intermittently interbedded with light gray boundstone. The formation is estimated to be approximately 2,000 feet thick.

Whirlwind Formation - Predominantly light olive-gray slope-forming shale interbedded with thin-bedded limestone. The Whirlwind Formation is 200 to 260 feet thick.

Dome Limestone - Cliff-forming light gray massive limestone. The basal third is medium to dark gray and forms dark ledges above the underlying upper Chisholm Shale slope. The middle third is mostly calcisiltite with 10 percent oolitic beds and numerous horizons of secondary dolomite. The upper third of the Dome Limestone contains abundant dolomitic algal boundstone that forms a ledge and slope topography. The Dome Limestone ranges in thickness from 230 to more than 330 feet.

Chisholm Formation - The upper portion of the Chisholm Formation forms an ever-present slope at the base of the Dome Limestone ledges and cliffs and is an olive-gray to reddish-brown shale approximately 15 to 50 feet thick.

The limestone ore in the West Quarry area is located in the middle Dome Limestone. The limestone ore zone averages 86 feet in thickness and dips 19 to 22 degrees to the east. The dolomite ore is located stratigraphically above the Dome Limestone in the dolomite layer of the Limestone of Cricket Mountains Formation. The dolomite ore zone averages 92 feet in thickness and dips 22 degrees to the east.

### 3.1.3.2 Paleontology

Most fossil-bearing strata in the WSRA are from two geologic eras: Paleozoic and Cenozoic. The older Paleozoic deposits are found in the mountain ranges. Cenozoic deposits include the recent Quaternary alluviums which are found in the valleys and foothills.

Paleozoic rocks in Utah consist primarily of limestone, dolomite, and sandstone. The fossilized fauna present within the Paleozoic strata provide stratigraphic control relative to the geologic history of the mountain ranges of western Utah. There are no data on the individually exposed Paleozoic formations in the WSRA. The invertebrate fossils they contain consist of several species of trilobites and sponges, cephalopods, gastropods, and brachiopods.

The majority of the geologic deposits in the WSRA are dated as Cenozoic and consist of valley-fill alluvial, lacustrine, and volcanic materials. A variety of fossils are present in the strata, including larger mammals like bison, sheep and horses. Cenozoic fossils are

generally located along the margins of the valleys, and in the mountain ranges composed of Tertiary volcanic material. Fossil rabbits, fish, lizards, and birds have been documented. Less abundant, are the fossil clams and snails found in the valley fill.

### **3.1.3.3 Seismicity**

The Project site occurs within Zone 2 on the Seismic Zone Map of the United States, which correlates with a recommended seismic coefficient of 0.10 (i.e. a horizontal earthquake acceleration of 0.10 times gravitational acceleration). All designs of slopes, structures and mine-related facilities would incorporate this recommended seismic coefficient of 0.10 in accordance with Uniform Building Code specifications.

## **3.1.4 Climate and Air Quality**

### **3.1.4.1 Climate**

The climate of the WSRA is typical of the Great Basin; characterized by limited precipitation, low relative humidity, rapid evaporation, high frequency of clear skies, and extreme daily and annual ranges in temperature. Temperatures vary from a high of 105°F during summer to a low of minus 30°F during winter. Annual precipitation averages 7.89 inches, mostly received as snow. Summers are normally dry except for occasional short duration, high intensity thunderstorms in the late summer and early fall.

### **3.1.4.2 Air Quality**

Air quality in the WSRA has been designated as Class II by the U.S. Environmental Protection Agency (EPA). This classification permits moderate deterioration as defined by incremental standards. The incremental standards for Class I areas are the most restrictive. The nearest Class I area is Capitol Reef National Park, approximately 70 miles to the east of the WSRA. The area has been designated as an attainment area for National Ambient Air Quality Standards.

## **3.1.5 Water Resources**

The Cricket Mountain Project is located within the Great Basin hydrologic region which is characterized by an internal drainage system where runoff collects in the valley basins and eventually evaporates. The source of water in the region is from precipitation and surface flowing water. Much of the surface water flow percolates down through unconsolidated material, recharging groundwater resources. Based upon drilling data, the depth to ground water is in excess of 200 feet from ground surface (CLI, Personal Communication, 1996). The Cricket Allotment has been identified as containing a major ground-water recharge zone. Ground-water quality is generally good in areas of natural recharge. However, in the Project area, the ground water contains a high salt content. Although it has value for livestock use or industrial purposes, it is unsuitable for human consumption.

Several intermittent streams drain the Project area. Flow is generally to the east-northeast toward the Beaver River drainage, which is the only perennial stream near the



Project area. North of the Cricket Mountains, the Beaver River joins the Sevier River approximately 20 miles from the inlet to the dry Sevier Lake bed. Most of the inflow into the Beaver River is diverted for crop irrigation. Six reservoirs have been constructed to collect water for livestock and wildlife use in the Cricket Allotment. The reservoir closest to the proposed Project area is Big Sage Reservoir located 1.5 miles south of the West Quarry area. Although very small and rarely containing water, the Big Sage Reservoir occasionally provides seasonal water for wildlife.

Water use associated with the proposed extension would generally be limited to dust control on haul/access roads and disturbed areas, and during drilling and crushing operations. The water would be supplied via truck from an existing well located on State lands currently leased by CLI. The increased production associated with the expansion would slightly increase water needs for the mining operations. However, it is anticipated that the existing well production would be sufficient to meet the water needs. CLI's Cricket Mountain Project has a general permit for stormwater discharges associated with industrial activity.

### 3.1.6 Vegetation

#### 3.1.6.1 Vegetation at the Cricket Mountain Project

On August 6, 1996, Intermountain Ecosystems, L. C. determined plant associations, and conducted a sensitive plant inventory in the Project area (Kass, 1996). Plant associations included juniper woodland and Great Basin sagebrush (West, 1988). Most aspects in the Project area are dominated by Utah Juniper (*Juniperus osteosperma*). Pinyon pine (*Pinus edulis*), though present in the Project area, is not abundant. Junipers are approximately 1-2 meters tall and increase in density on steep slopes. Black sagebrush (*Artemisia nova*), Nevada ephedra (*Ephedra nevadensis*), Salina wildrye (*Elymus salinus*) and bluebunch wheatgrass (*Elymus spicatum*) are often found growing on steep, open slopes in association with juniper. Based upon published literature (Tueller et al., 1979), juniper woodland in the Great Basin average 32.8% cover. At the approximate elevation of the study area (5,600-6,400 feet) Tueller et al (1979) indicate that the cover averages 28.0%. These averages were confirmed as representative by field surveys in 1996.

On steep limestone hogbacks, scattered junipers, cliffrose (*Covania mexicana*), needle-leaf mountain mahogany (*Cercocarpus ledifolius*), rock spirea (*Petrophytum caespitosum*), and low goldenbush (*Haplopappus nanus*) are the dominant plant species. Common grasses associated with the juniper woodland include Indian ricegrass (*Oryzopsis hymenoides*), needle and thread (*Stipa comata*), and galleta grass (*Hilaria jamesii*).

Big sagebrush (*Artemisia tridentata*) and snakeweed (*Gutierrezia sarothrae*) are common in washes and alluvial fans in the valley bottoms. Based upon published literature (West, 1988) and site specific surveys, the Great Basin sagebrush species association total cover is estimated to range from 30 to 40 percent. In the past century, sagebrush steppes were heavily grazed and have displaced perennial grasses (West, 1988). Adventive annuals such as cheatgrass (*Bromus tectorum*), musk mustard (*Chorispora tenella*), storksbill (*Erodium cicutarium*), halogeton (*Halogeton glomerata*) and Russian thistle (*Salsola pestifer*) are common in the Project area, especially on gently sloping terrain.

Appendix A includes a complete listing of vegetation species (Figure 3-5).

### 3.1.6.2 *Threatened, Endangered, and Sensitive Species*

There are no federally-listed threatened or endangered plant species in the WSR (BLM, 1986). Sensitive plants of concern in the WSR and Project area are: inch-high milkvetch (*Astragalus uncialis*), Compact cateye (*Cryptantha compacta*), Ibex buckwheat (*Eriogonum nummularum* var. *ammophilum*), Tunnel Springs beardstongue (*Penstemon concinnus*), and Jones globemallow (*Sphaeralcea caespitosa*) (BLM, 1986). Inch-high milkvetch is known to occur at Long's Ridge about 25 miles north of the Project area (Kass, 1992). Compact cateye is known to occur in western Millard County near the Desert Experiment Range and Ibex buckwheat is known to occur at Sand Pass about 40 miles north of the Project area (Kass, 1992). Tunnel Springs beardstongue and Jones globemallow are known to occur in western Millard and Beaver Counties (Kass, 1992).

None of the sensitive plants were located after walking linear transects in areas of high and moderate potential habitat (Kass, 1996). Appendix B includes sensitive species inventory results. There was low potential habitat for inch-high milkvetch in the surrounding area and potential habitat on limestone and dolomite outcrops for Jones globemallow (Kass, 1996).

## 3.1.7 Wildlife

### 3.1.7.1 *Wildlife at the Cricket Mountain Project*

Wildlife that may be found in the Project area include mule deer, pronghorn antelope, black-tailed jackrabbit, desert cottontail, badger, coyote, bobcat, white tail antelope squirrel, chukar partridge, Cooper's hawk, American kestrel, northern harrier, rough-legged hawk, pinyon jay, mourning dove, black-throated sparrow, bats, and horned larks (Gordon, 1993 and BLM, 1986). Bats may inhabit caves in the upland cliffs.

Critical yearlong antelope habitat covers some of the Project area (BLM, 1986). The Utah Division of Wildlife Resources (UDWR) describes the antelope habitat as substantial, but not critical because this habitat type covers an extensive area throughout the WSR (Figure 3-1). The Cricket Mountains are a high priority yearlong antelope habitat, with critical winter range, and fawning in the spring. A critical mule deer habitat falls outside of the Project area approximately one mile to the northwest within an area of black sagebrush-type vegetation (BLM, 1986).

Year-round, there are significant raptor populations that occupy areas near the Project area (BLM, 1986). Golden eagles, prairie falcons, and marsh harriers nest and winter in the crucial raptor habitat around the Cricket Mountains. Nesting pairs will use the same nest for different years; however, no known raptor nest sites exist within the proposed area of disturbance (Pierce, 1996).

The three species of upland game include chukar partridge, sage grouse, and ring-necked pheasant. Chukar partridge range is located in the Cricket Mountains and falls in Sections 30 and 31, T21S, R9W and Sections 25, 26, and 36 T21S, R10W (Figure 3-4). There are no active strutting grounds or leks in the Project area.

### 3.1.7.2 Threatened, Endangered, and Sensitive Wildlife

Table 3.1 lists threatened, endangered, and sensitive species known to occur in the WSRA.

Sensitive species which may be in the WSRA include the spotted bat, big free-tailed bat, small footed myotis, long-eared myotis, long-legged myotis, Allen's big-eared bat, Yuma myotis, red bat, bald eagle, golden eagle, ferruginous hawk, peregrine falcon, Swainson's hawk, loggerhead shrike, mountain bluebird, and western bluebird (BLM, 1996).

The UDWR designated a 41,600 acre area in the WSRA as crucial raptor nesting habitat (March 1 - June 30) (Figure 3-3). The Project area falls within this nesting habitat in Sections 25, 26, 35, and 36 of T21S, R10W and Sections 30, 31, and 36 in T21S, R9W. UDWR requires a 1/2 mile protected zone surrounding the nest of any raptor during the breeding season. The BLM requires a 1/4 mile radius around all active and inactive nests and designates the areas as crucial nesting habitat. There are no active raptor nests located in the Project area (Pierce, 1996).

Bald eagles are occasionally seen in the Project area during the winter, depending on the activity of prey (Gordon, 1993). Peregrine falcons occasionally migrate through the Project area during spring and fall, while Swainson's hawks occasionally use the Project area. Golden eagles, loggerhead shrikes, and mountain bluebirds are common to the Project area and may nest.

The Project area falls within ferruginous hawk (*Buteo regalis*) habitat, and sightings have increased over the past few years. Ferruginous hawks have been active in the past in section 31, T21S, R9W and section 2, T21S, R10W. The ferruginous hawk is a category 2 candidate species under the Endangered Species Conservation Act of 1969 and a sensitive bird for Utah. The ferruginous hawk breeding season is from April 1 to July 15.

Loggerhead shrikes are a Category 2 species under the Endangered Species Conservation Act, and nest in trees in the Project area.

The Utah prairie dog was recently added to the Endangered Species list; however, the BLM is not aware of any populations within the Project area (Gordon, 1996). In June, 1995, the Fish and Wildlife Service, Department of the Interior proposed to remove the American peregrine falcon (*Falco peregrinus anatum*) from the list of endangered and threatened wildlife and the critical habitat designation. To date, the American peregrine falcon remains listed.



**Table 3.1 Endangered, Threatened, and Sensitive Species on the Warm Springs Resource Area**

COMMON NAME	PRESENCE	FEDERAL STATUS	STATE STATUS	OCCURRENCE AT PROJECT SITE
<b>MAMMALS</b>				
Pygmy rabbit	Yearlong	C2	---	---
Spotted bat	Yearlong	C2	S	P
Clear Lake pocket gopher	Yearlong	C2	---	---
Big free-tailed bat	Yearlong	---	S	P
Mexican big-eared bat	Yearlong	---	S	P
Red bat	Summer	---	S	P
<b>BIRDS</b>				
Northern goshawk	Yearlong	C2	---	P
Western grebe	Summer	---	SQ	---
Golden eagle	Yearlong	S	---	---
Great blue heron	Yearlong	---	SQ	---
American bittern	Summer	---	SQ	---
Ferruginous hawk	Yearlong	C2	S	P
Swainson's hawk	Summer	---	S	P
Western snowy plover	Summer	C2	S	---
Southwestern willow flycatcher	Summer	C1	---	---
Peregrine Falcon	Summer	E	E	P
Greater roadrunner	Yearlong	---	S	---
Bald eagle	Winter	E	E	P
Yellow-breasted chat	Summer	---	SQ	---
Western least bittern	Summer	C2	---	---
Loggerhead shrike	Yearlong	---	C2	Y
Lewis' woodpecker	Winter	---	S	---
Black-crowned night heron	Summer	---	SQ	---
Long-billed curlew	Summer	3C	S	---
Osprey	Migrant	---	S	---
Fox sparrow	Summer	---	SQ	---
American white pelican	Summer	---	S	---
Double-crested cormorant	Summer	---	S	---
White-faced ibis	Summer	C2	S	---
Purple martin	Summer	---	S	---
Mountain bluebird	Yearlong	---	S	P
Western bluebird	Summer	---	S	---
Caspian tern	Summer	---	S	---
<b>REPTILES AND AMPHIBIANS</b>				
Plateau whiptail	Yearlong	---	S	P
Utah mountain kingsnake	Yearlong	---	S	P
Utah milk snake	Yearlong	---	S	P
Western spotted frog	Yearlong	C2	Y	---
<b>INSECTS</b>				
Great Basin silverspot butterfly	---	C2	---	---

Federal Categories: E=Endangered, T=Threatened; C1, C2, 3C are categories for species for which there is not enough information currently available to warrant listing as threatened or endangered. State Categories: T=Threatened, S=Sensitive, SQ=Status Questioned. Occurrence Categories: Y=Known Occurrence on the HRRA and possibly affected by the proposed project. P=Potential Occurrence on the WSRA, but not documented.

### 3.1.8 Visual Resource Management and Noise

#### 3.1.8.1 Visual Resource Management

The Cricket Mountains are characterized by broad open valleys, interspersed with low rolling hills with interspersed cliffs, and moderately high mountains. The valley floors contain a mix of pinyon-juniper and sagebrush leading up to buttes carved from volcanic formations (BLM, 1986). BLM established visual resource values in the WSRA in 1985 to identify scenery quality with minimum quality standards. The Visual Resource Management (VRM) System sets objectives for 1) managing the visual resources; 2) describing the degree of landscape modification allowed; and 3) providing a basis for BLM land use planning decisions. BLM assigned a C-rating (low visual quality) to flat valley bottoms like the Project area, with a VRM class IV designation.

A VRM Class IV designation is the least restrictive of the BLM visual classifications. Management objectives for a VRM class IV area allow provisions for changes that "may attract attention and be a dominant feature of the landscape in terms of scale; however, the change should repeat the basic elements of form, line, color, and texture inherent in the characteristic landscape" and appear compatible with the natural surroundings (BLM, 1986).

#### 3.1.8.2 Noise

The existing quality of the noise environment of the Project area is expected to be good because the site is remote and has limited human activity. Current human activity noise sources are the existing processing plant, aircraft, and traffic along county roads. The primary background noise source is wind.

### 3.1.9 Solid and Hazardous Wastes

#### 3.1.9.1 Solid and Sanitary Wastes

Portable toilets would be used for sanitary waste at the proposed mining areas. The toilets would be serviced by a licensed contractor. More permanent facilities may be constructed at the crusher area.

Used tires, scrap lumber, etc. would be stored in very small "bone yards" near each quarry area. No toxic or hazardous materials would be stored in these areas. All materials would be removed at closure and disposed of in an approved landfill.

#### 3.1.9.2 Hazardous Wastes

Currently, an explosives magazine and a cap magazine for the Poison Mountain Quarry are located south of the crushing and screening facilities near the base of Poison Mountain. The magazines would remain in place for use during the West Quarry and BB Dolomite operations.

Typically, ammonium nitrate and fuel oil (ANFO) would be used as blasting agents with other agents used depending on conditions. Blasting agents would be stored in



compliance with applicable Bureau of Alcohol Tobacco and Firearms (BATF) and Mine Safety and Health Administration (MSHA) regulations.

Diesel fuel and gasoline are stored in above ground tanks near the crushing and screening facilities at the Poison Mountain Quarry. The tanks are installed on concrete pads and surrounded by concrete berms to contain leaks, spills or ruptures of the tanks. Above ground storage tanks are inspected frequently for leaks or ruptures. Oil is stored inside a containment area within a building. These facilities would be used for the West Quarry and BB Dolomite operations.

### **3.1.10 Cultural Resources and Native American Religious Concerns**

#### **3.1.10.1 Cultural Resources**

Cultural resources consist of prehistoric and historic archaeological deposits; structures of historic or architectural importance; and Native American traditional ceremonial, ethnographic, and burial sites. Analysis of cultural resources can provide valuable information on the cultural heritage of local citizens and regional populations. Cultural resources are nonrenewable resources, which are afforded protection by Federal, state and local laws, ordinances, and guidelines.

There are numerous Federal and state laws, ordinances, regulations, and standards for ensuring the protection of cultural resources. Projects on Federal lands, or projects that have Federal involvement such as funding or permitting, are required to comply with pertinent Federal laws protecting cultural resources. The Antiquities Act of 1906 and the following Federal legislation, policies, regulations, and guidelines (e.g.: National Historic Preservation Act of 1966—NHPA, American Indian Religious Freedom Act of 1978—AIRFA, and Native American Grave Protection Act of 1990—NAGPRA) have been enacted to protect cultural resources and could apply to this proposed Project.

Several class III archaeological inventories have been conducted in the Project area (WCRM, 1996). Results were compared with previous studies conducted in the area (ARCON 1993). The on-site survey was nonintrusive, and no attempt was made to remove visual obstructions such as vegetation or other materials. Selected areas were probed to determine the nature of deposits, depth, and presence or absence of cultural materials.

#### **3.1.10.2 Results**

During the Class III archaeological survey of the proposed affected lands (tracts A and B), 18 sites and 19 isolated occurrences were recorded. Two of the 18 sites (42Md1080 and 1076) found during the survey are currently recommended as eligible for the National Register of Historic Places (NRHP). Site 42Md1080 is described as a lithic scatter, and 1076 is described as sheep camp/lithic scatter.

The remainder of the sites recorded during the survey will not be affected by the proposed expansion.

### **3.1.10.2 Native American Religious Concerns**

[Awaiting results of consultation]

## **3.1.11 Socio-Economics**

The Project is located in the western center of Utah in Millard County. Delta and Fillmore are the closest urban centers to the Project, and are 32 and 40 miles, respectively, from the Project site. Provo and Salt Lake City are approximately 120 and 160 miles to the North, respectively. The Millard County seat is near the center of the eleven western states and midway between Los Angeles (600 miles) and Denver (550 miles). Millard County is the third largest county in Utah with 78% federally, 8% state, and 14% privately owned property.

### **3.1.11.1 Population**

Millard County's population of 11,317 is spread between ten incorporated towns: Kanosh, Meadow, Fillmore, Holden, Scipio, Delta, Hinckley, Oak City, Leamington, and Lynndyl (Millard County, 1995). Fillmore, the county seat, has a population of approximately 2,000 people, while Delta is larger at 3,800 people. The county is highly rural with approximately 2 persons per square mile.

### **3.1.11.2 Employment**

The economy of Millard County is based on agriculture, mining, and electricity production. Farmers and ranchers in the area produce dairy and beef cattle and crops that include mushrooms, alfalfa hay, alfalfa seed, barley, wheat, corn, potatoes and honey (Millard County, 1995).

The county encourages new industry which presently includes the existing CLI limestone mining and processing operation, a coal fired electrical generating plant, and the Brush beryllium processing plant. The electrical plant is the largest non-governmental employer in the county employing 650 people, mostly living in Delta. Mining claims in the mountain ranges include minerals such as tungsten, copper, lead, silver, gold, manganese, sulfur, molybdenum, perlite, uranium, pumice, gypsum, and building stone.

### **3.1.11.3 Housing**

Fillmore has approximately 745 households with an estimated average of 5 persons per household (Duncan, 1996). Delta has approximately 1,022 households with an average of 3.5 persons per household (Duncan, 1996). The county has 3,760 parcels of land with a residential land use designation, 353 parcels with a commercial land use designation, and 10,015 parcels with an agricultural land use designation. Fillmore and Delta have several hotel/motel units and apartments available for extended use.



#### **3.1.11.4 Schools and Services**

Millard school district has a present enrollment of 3,840 children. Within the county school district there are three elementary schools, two middle schools, two senior high schools, and a vocational training school (Millard County, 1995).

Fillmore city administration is handled at the city hall, which includes offices of the Mayor, City Administrator, Recorder, and Treasurer. Other facilities include a lagoon wastewater treatment plant, mountain spring water supply, library, public works (electricity, sewer, and water), and post office. The Millard County courthouse in Fillmore includes an Assessor, Auditor, Clerk, County Commission, Computer Coordinator 4th Circuit Court, Maintenance Office, Recorder, and Treasurer.

Other services in Delta and Fillmore include ambulance services, a volunteer fire department, and the Millard County Sheriff. Other community organizations include churches, Civic Arts Council, Daughters of Utah Pioneers, and the Lions Club.

#### **3.1.12 Transportation**

The existing Poison Mountain Quarry and proposed BB Dolomite and West Quarry areas can be accessed by traveling approximately five or six miles west of the processing Plant, which is located near State highway 257 (Figure 1-1). State highway 257 allows access to the Project from Delta, Milford, and Cedar City. The Cricket Mountain Project is approximately one hour away from Fillmore via 25 miles of gravel road and 15 miles along State Highway 257.

The Union Pacific Railroad mainline passes through the center of Millard county and closely parallels State Highway 257. North-South Interstate 15 is accessible from State highway 257, and passes through Fillmore, intersecting with Interstate 70, a few miles south of Fillmore.

#### **3.1.13 Fire Control**

BLMs fire suppression policy is to "fully suppress all wildfires in the WSRA with whatever combination of manpower and equipment is required to handle the incident" (BLM, 1986). Eighty-five percent of wildfires in the WSRA are started by lightning. The remainder of fires are started by human activity.

BLM fire suppression forces are based at Fillmore, with two medium engines and one heavy engine manned by eight crewmen. During periods of high fire danger, one standby 2,800-gallon water tender is stationed at Fillmore. The BLM works closely with other fire departments in the area (BLM, 1986). The Fillmore Fire Department firemen are well trained, with an average 2 1/2 minute response time in town, and high turnout at each fire (Millard County, 1995).

## **3.2 Alternative**

### **3.2.1 No-Action Alternative**

The description of the affected environment for the No-Action Alternative would be the same as that for the proposed action.

# Chapter 4 - Environmental Consequences

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## 4.1 Proposed Action

### 4.1.1 Lands

The proposed expansion would not impact the current ownership of the parcels of land in the area of the Cricket Mountain Project.

The construction and operation of the proposed expansion would directly impact land use by reducing the area available for livestock grazing, wildlife range and recreational activities. The proposed expansion falls within the Cricket Allotment (Allotment 5779) which is 90,205 acres in size. The Project disturbance would be approximately 206 acres consisting of 132.6 acres on BLM administered land, 70.4 acres on Continental owned land, and 2.7 acres on State owned land. Therefore, Allotment 5779 would be reduced by approximately 0.23% which would not constitute a significant impact on current grazing patterns. The residual impacts would be the same as the direct impacts and the proposed expansion is not expected to create an indirect impact or have a cumulative effect on land use.

The recreational use of the Project area is low and the proposed expansion would not significantly alter the current level of hunting and off-road vehicle use, which are the main types of recreation in the WSRA.

### 4.1.2 Topography and Soils

There are no unique physical features in the proposed expansion area. The direct impacts to topography are the quarries, overburden areas and reject stockpiles which



will result in permanent modifications to the topography and landscape of the site. The residual impact from the proposed expansion is the alteration of the topography. The proposed expansion is not expected to create an indirect impact or have a cumulative effect on the topography.

The slopes of the overburden disposal areas and reject stockpiles would be designed to ensure stability incorporating an adequate factor of safety. The quarries would be designed according to surface mining industry standards and Continental's experience at the Poison Mountain Quarry and other operations. The proposed Plan of Operations includes mitigation to stabilize disturbed areas through erosion control and sedimentation control.

Reclamation and closure of the disturbed areas is described in detail in Chapter 2 and in the *Modification to Plan of Operations and Notice of Intention to Revise Mining Operations* (SRK, 1996). The areas to be disturbed comprise the following major mine components: quarries, overburden disposal areas, undersize material stockpiles, and roads. It is anticipated that, with the exception of stable highwall areas in the quarries, which would be constructed in competent bedrock material, and the slopes of the overburden disposal areas, most facilities would be reclaimed and revegetated. The disturbed areas would be reclaimed and contoured.

The direct impact to soils due to the proposed expansion disturbance would be the removal of topsoil from the Project area to stockpile for the reclamation activities. Little soil can be salvaged from the rocky areas of the proposed quarries and overburden disposal areas. These areas correspond to the Amtoft-Lodar soils. The thicker Dera soils are found in the more flat areas of the site, such as the proposed undersize material piles. Site observations indicate that six to 12 inches of soil may be available from the drainage under Overburden Disposal Area #1; six to 12 inches of soil may be available in the access road alignment; six to eight inches of soil may be available from the expansion of the Poison Mountain limestone undersize material stockpile, and up to 12 inches of soil may be available from the undersize material stockpile near the BB Dolomite Quarry area. A total of approximately 303.3 acres and 78,100 cubic yards of soil would be disturbed during the proposed expansion.

Best Management Practices (BMPs) would be used to limit soil erosion and reduce sediment in precipitation runoff from Project facilities and disturbed areas during construction and operations. BMPs may include, but are not limited to, straw bale sediment traps, diversion ditches, and rock and gravel cover. Vegetation would be used as a cover to reduce the potential for wind and water erosion. Following construction activities, areas such as cut and fill embankments and soil stockpiles would be seeded as soon as practical and safe.

Concurrent reclamation would occur in areas where activities are discontinued and are no longer active parts of the operation. Concurrent reclamation reduces erosion, provides early impact mitigation and reduces final reclamation work.

All available soils would be collected, stockpiled and used during reclamation, therefore the residual impacts resulting from the proposed Project would be minimal. The proposed expansion is not expected to create an indirect impact or have a cumulative effect on soils.



### 4.1.3 Geology, Paleontology and Seismicity

The direct impact to geology would result in the alteration and removal of the existing limestone deposit by quarrying activities. Approximately 36 million tons of high-calcium limestone and waste rock would be quarried over the 20 year life of the Project. A portion of the deposit would be processed into lime; another portion would be removed to waste rock dumps. The indirect impact to geology would be the overall reduction in the total amount of limestone within the Cricket Mountain area. The amount of limestone would represent a small fraction of the limestone in the region. As with direct impacts, the residual impact to geology would be the alteration and removal of geologic material from the Cricket Mountain area. The proposed expansion is not expected to have a cumulative effect on geology.

The proposed expansion would uncover and remove fossils during the mining of limestone. The fossils that would be uncovered are common throughout the area, and no significant losses are anticipated. It should be noted that, drilling data in the proposed quarry areas suggests that the economic deposits are relatively devoid of fossils. Therefore, the direct and indirect impacts to fossils are anticipated to be minor. Leaving the pit walls and benches exposed would provide access to currently buried fossils which could provide educational opportunities. The residual impact to paleontology would be the same as the direct and indirect impacts. The proposed expansion is not expected to have a cumulative effect on paleontology.

The proposed expansion would have no impact on seismicity. All structures and mine-related facilities would be designed according to the Uniform Building Code specifications and would withstand any earthquake forces that are likely to occur in the area. Therefore, the proposed expansion would not create any direct or indirect impacts, residual impacts or cumulative effects in relation to seismicity.

### 4.1.4 Climate and Air Quality

The controls for the proposed project are defined and regulated under DAQE-021-96. The current air quality permit includes control measures to mitigate impacts to no significant impact. The present controls measures enforced by the current air quality permit include but are not limited to: speed limits for vehicles associated with mining operations, use of a water spray and chemical dust suppressants, as needed; and water sprays at limestone handling points (as defined in the permit). The primary source of potential direct and indirect air quality impacts due to the proposed expansion would be related to fugitive dust generated by mining-related activity. Controls to minimize air quality impacts are specified in the current air quality permits.

Disturbance would be phased as much as practical to limit the amount of disturbance at any given time. Interim reclamation would occur, as practical, to cover disturbed areas, overburden disposal areas and stockpiles.

The proposed expansion would operate within the limits of the air quality permits. Visible emission observations that are performed during the initial compliance inspection would take place at the crushers, screens and conveyor transfer points, and would conform with the requirements of the air permits. The Executive Secretary of the Utah Air Quality Board would specify the continuous monitoring requirements.

Beyond about a two mile radius from these operations, there should be essentially no impacts on air quality from the proposed expansion. The proposed expansion would not create any residual impacts or have a cumulative effect on air quality.

#### 4.1.5 Water Resources

The direct impact to water resources would be the control of surface water flows surrounding the proposed structures and mine-related facilities and the additional use of ground-water resources to supply the mining operations of the proposed expansion. The additional ground water would be supplied via truck from an existing well located on State lands currently leased by CLI and it is anticipated that the existing well production would be sufficient to meet the water needs.

A watershed analysis was conducted to determine runoff volumes and peak flows in the watershed containing the proposed Waste Rock Disposal Area #1. This area was chosen due to the fact that its design entails construction in three drainages. Thus as water from the upstream watershed passes through the waste rock dump, it will be slowed.

The water shed was divided into 11 sub-catchment areas for modeling purposes. The PC program WASHED was used to calculate both runoff volumes and peak flows due to the 100 year 24 hour storm event (2.8"/24hr) for each sub-catchment. The analyses indicated that the maximum amount of storm water from the design event would not exceed the capacity of the waste rock dump to transmit the water through its base, and no significant impounding of water should occur due to the fact that the water will flow through the waste rock material. The flows from the upstream catchment area should pass through the waste rock disposal area without overtopping the waste rock.

The indirect impact to the water resources would be minimal pollution due to industrial stormwater discharges. CLI's Cricket Mountain Project has a general permit for stormwater discharges associated with industrial activity. The permit (Permit #UTR 000000; expiration date September 30, 1997) was issued by the Division of Water Quality, Department of Environmental Quality, State of Utah and authorizes the discharge of industrial stormwater from the Project site to waters of the State in accordance with discharge points, effluent limitations, monitoring requirements, and other conditions set forth in the permit. With the implementation of good engineering practices for the control of stormwater and Best Management Practices to prevent or reduce the pollution of the waters of the State, the pollution of the water resources in the Project area is expected to be negligible. Acid rock drainage and metals leaching are not anticipated at the proposed site.

The closest reservoir to the proposed Project area is Big Sage Reservoir located 1.5 miles south of the West Quarry area. No impact is anticipated on this or any other nearby reservoirs.

The proposed expansion should not create any residual impacts or have a cumulative effect on water resources.

#### 4.1.6 Vegetation

The proposed expansion area would disturb a maximum of 303.3 acres on public lands administered by the BLM, lands leased from the State of Utah, and patented mining claims owned by CLI.

Direct and indirect impacts to vegetation would include vegetation removal and associated resource area productivity reductions. The proposed expansion would create an indirect impact to vegetation, and therefore, wildlife. Animals normally grazing on proposed Project lands would be displaced onto adjacent lands as a result of reduced vegetative areas. Animals would then graze on adjacent lands and possibly reduce the available vegetation resources.

The Project area would be revegetated by following the procedures specified in the NOI (SRK, 1996). Reclamation would be completed in accordance with Federal and State regulations as outlined in the Modification to Plan of Operations and Notice of Intention to Revise Mining Operations (SRK, 1996). Portions of the Project facilities would be decommissioned prior to final mine closure. These areas would be reclaimed concurrently with the active quarry operations. Concurrent final reclamation will take place on the overburden disposal areas as soon as practical and safe after overburden stripping is complete. Areas disturbed by soil stockpiles will be reclaimed after the soil is used in reclamation.

Overburden disposal areas would be built with lifts approximately 40 feet high offset by benches approximately 25 feet wide. Because of limited soil available for reclamation, the disposal area slopes between the benches would be left at angle of repose, and the tops would be covered with a four-inch layer of soil and the area reseeded.

The Reclamation Plan specifies no revegetation in the cliff areas of the quarries. This reclamation would result in the re-establishment of a less diverse plant community in the short-term, until other area species invade to create higher diversity over the long-term.

#### 4.1.7 Wildlife

The proposed expansion would result in temporary direct and indirect impacts to certain species of wildlife. Mining activities would create some hazards and wildlife would be displaced onto adjacent lands. During mining, hazardous areas would be covered and made inaccessible to wildlife, although most wildlife would avoid the area (Gordon, 1993).

The proposed expansion would, temporarily, cause a loss of high priority chukar and year-long antelope habitat until disturbed areas are reclaimed. The area would be recontoured and reseeded following mining to reestablish wildlife habitat. There are no known strutting grounds or leks in the Project area (BLM, 1986)

There are no active raptor nests in the area. Five previous raptor nesting areas designated as Category 2 crucial habitat in the area, would limit off road vehicle use to existing roads and trails. CLI would implement procedures to avoid direct impact to nests in or near the Project area inhabited by raptors subsequent to the beginning of construction.

Where there are trees, field personnel would note trees containing nests and contact the appropriate agencies. CLI would attempt to avoid disturbing bats in winter roost sites and maternity colonies, and would notify BLM-WSRA and UDWR wildlife biologists if bats are found to evaluate potential impacts to the species. Cliffs developed during mining activities would provide habitat for bats.

#### **4.1.8 Visual Resources Management and Noise**

The proposed expansion would have a direct impact on the visual resources of the area. Looking west from State Highway 257, changes to the landscape would result from the BB Dolomite Quarry which would be located in front of the existing quarry, and the West Quarry, which would be located behind the existing quarry. However, since the new quarries are located six miles from the main travel artery (State Highway 257) and mining would remove the upper portion of already low lying hills, the visual impact is considered to be minimal.

The proposed expansion would create a slight impact to the landscape in the BB Dolomite and West Quarry area during mining. In order to minimize this impact, reclamation activities would focus on repeating the basic elements of form, line, color, and texture of the area landscape. The reclamation plan portion of the NOI specifies removing all processing facilities and stabilizing quarry walls and waste rock dumps. Soil/growth media replacement and revegetation would promote the development of a visually acceptable landscape.

Since the Project area is C-rated (low visual quality), with a VRM class IV designation, no cumulative impacts to visual resources are anticipated to result from the proposed action.

The proposed expansion, which includes haul truck and quarrying operations, would generate a low, constant noise. Noise generated by the Project would be noticed by the workers who would wear appropriate safety equipment, but, not by the public since there are no houses located nearby. The proposed noise levels are considered either minimal or short-term. Direct impacts from increased or occasional noise levels would result in short-term wildlife avoidance of the area. However, it should be noted that this is not a deviation from present conditions due to the fact that the present quarry operations create similar conditions.

No indirect or cumulative effects from noise are anticipated to occur as a result of the proposed expansion. Impacts as a result of introduced or increased Project noise would cease at the time of Project termination, therefore, no residual impacts would occur.

#### **4.1.9 Solid and Hazardous Wastes**

All solid waste generated at the mine and ancillary facilities would be disposed of at an approved site. All fuel used for support vehicles would be stored as per Uniform Fire Code specifications. Small amounts of miscellaneous chemicals such as nitric and hydrochloric acids, sodium hydroxide, and other analytical reagents necessary to support a quality control lab would be stored and disposed of according to approved state and federal laws. Blasting agents and cap sensitive primers would be stored in MSHA approved storage facilities.



#### **4.1.10 Cultural Resources and Native American Religious Concerns**

Two sites will be impacted by Project activities. An approved data recovery plan will be implemented to mitigate impacts to these sites prior to disturbance.

[Awaiting results of Native American Consultation for further information]

#### **4.1.11 Socioeconomics**

Socioeconomic impacts resulting from the Cricket Mountain Project are discussed in the following paragraphs, and include population, employment, income, housing, schools, and community services.

##### **4.1.11.1 Population**

CLI anticipates hiring employees from the existing population surrounding areas. No CLI employees would relocate to the area from other facilities. Therefore, no impacts, cumulative effects or residual impacts are anticipated to occur.

##### **4.1.11.2 Employment**

The workforce at the existing Project is currently approximately 50 people. The development and operation of the proposed Project would require approximately 20 additional full-time employees. Of this amount, no CLI employees would relocate to the area from existing CLI facilities, and approximately 20 employees would be hired from the area labor force. It is assumed that these people would use existing facilities and services in Delta, Milford, and Fillmore. Therefore, they should not additionally impact the communities or socioeconomics.

When analyzing the economic impacts of the mining industry on the general economy, research indicates that for every job created in the mining industry, an additional 1.25 jobs are created in other sectors of the economy (Dobra, 1988). Further analysis indicates that 0.75 of these 1.25 jobs are created in rural areas, and 0.50 job is created in urban areas. This analysis developed in Nevada, is similar to Utah because of the rural nature of both states.

Selecting the No Action Alternative would result in the loss of the 50 existing jobs and prevent the development of 20 new ones.

##### **4.1.11.3 Income**

By using average wages, projected personal income resulting from direct and indirect employment opportunities generated by the Cricket Mountain Project can be estimated. Based on information from CLI, the average annual salary of an employee involved with the Project would be approximately \$25,000 to \$45,000. Assuming CLI will add 20 employees, the total direct annual personal income earned by employees is a minimum of \$500,000 and a maximum of \$900,000.

The personal income per capita for Millard County is \$13,330 based on a population of 11,900 people (Department of Commerce, 1994). The Cricket Mountain expansion would

create 18.75 indirect jobs in the rural sector. Annual indirect income resulting from the Project is approximately \$249,938.

Selecting the No Action Alternative would result in the loss of the personal and indirect income from 88.75 jobs to the local area.

#### **4.1.11.4 Housing**

Under the proposed Project, CLI plans to hire approximately 20 employees from the local labor pool of Millard County. The population of the area would increase by approximately five family units and the number of housing units needed would not be significant. The majority of Cricket Mountain Project employees would be current Millard County residents using existing housing facilities. Therefore, no direct or indirect, cumulative effects or residual impacts to housing would result from the proposed Project.

#### **4.1.11.5 Schools**

CLI plans to hire most of the required staff from the local labor force of Millard County. Since the majority of employees would come from the local population, it is anticipated that any additional school-aged population would be absorbed in Millard County existing schools. Therefore, the Cricket Mountain Project should not have a direct or indirect impact, cumulative effect or residual impact to schools.

#### **4.1.11.6 Community services**

In the event of an emergency at the Cricket Mountain plant or quarries, the Millard County Sheriff, Millard County Ambulance Service, and/or the Delta Fire Department would service the site.

### **4.1.12 Transportation**

CLI employees living in Delta, Milford, and Fillmore would commute to the facilities on a daily basis and would increase auto activity on State Highway 257 and the gravel road from Fillmore to State Highway 257.

The existing access road will be used as access to the BB Dolomite area and to haul crushed and screened ore from the crushers. CLI will construct a new road along an existing exploration road from the existing Poison Mountain Quarry to the proposed West Quarry. The road will be used for hauling ore to the Poison Mountain crusher as well as provide access to the quarries.

The crushed ore from the crusher areas will be hauled by off-highway trucks to the Plant seven days per week. CLI will haul 154,000 tons of crushed ore to the Plant per month.

### **4.1.13 Fire Control**

BLM will continue their policy of full wildfire suppression in the WSRA. Prescribed burns are possible to maintain overall forage quality benefiting wildlife and the watershed.

## 4.2 Alternatives

### 4.2.1 No-Action Alternative

Implementation of the No-Action Alternative would result in the avoidance of all identified, Project-specific resource conflicts. Selection of No Action Alternative would deny development on the public lands in question. Selection of the No Action Alternative would deny Continental Lime the opportunity to recover and process known economic reserves. The No Action Alternative is considered for comparison purposes. It is not considered a reasonable alternative due to the fact the General Mining Laws, the Federal Land Policy Management Act (FLPMA) of 1976 and the regulation enforcing it (36 CFR 3809), and the Mining and Mineral Policy Act of 1976 encourage the exploration and development of mineral resources on public lands. The No Action Alternative could be selected only if the proposed action resulted in unnecessary or undue degradation to the public lands administered by the BLM.

#### 4.2.1.1 *Lands*

No significant impacts would be expected.

#### 4.2.1.2 *Topography and Soils*

Impacts to topography and soils, with the No Action Alternative, are controlled by grazing and off-road vehicle traffic. If grazing and motorized vehicles are restricted by the BLM, then there are no changes predicted from the present land status.

#### 4.2.1.3 *Geology, Paleontology and Seismicity*

No significant impacts would be expected.

#### 4.2.1.4 *Climate and Air Quality*

Impacts to air quality are dependent upon many variables including vehicle travel. If travel is restricted by the BLM, thereby reducing fugitive dust emissions, there should be no significant impacts.

#### 4.2.1.5 *Water Resources*

Impacts to water resources are controlled by many variables. If conditions remain the same or similar in the area, then impacts to water resources are controlled by BLM management practices.

#### 4.2.1.6 *Vegetation*

Impacts to vegetation with the no-action alternative are dependent on grazing. If grazing is controlled, there are no changes predicted from the present situation.

#### **4.2.1.7 Wildlife**

Due to lower livestock grazing, wildlife habitat conditions have been improving slowly in areas of the WSRA. With natural habitat, BLM would expect a gradual increase in antelope numbers in some areas of the WSRA over the short and long term, while deer and desert bighorn sheep numbers would not change due to the natural vegetation succession (BLM, 1986). Upland game populations would be expected to remain the same in the short and long term (BLM, 1986). There would be no significant changes to impacts on bald eagle and golden eagles, Swainson's hawks, white-faced ibis, long billed curlews, western snowy plovers, or sensitive mammal species.

#### **4.2.1.8 Visual Resource Management and Noise**

No significant impacts would be expected.

#### **4.2.1.9 Solid and Hazardous Wastes**

No significant impacts would be expected.

#### **4.2.1.10 Cultural Resources and Native American Concerns**

No significant impacts would be expected.

#### **4.2.1.11 Socio-Economics**

With the No Action Alternative, there is potential for increased net cash cattle ranch income in the long-term. However, 50 existing jobs would be lost, and 38 additional direct and indirect jobs would not become available. Populations, employment would maintain or increase based on Millard County estimates.

#### **4.2.1.12 Transportation**

No significant impacts would be expected.

#### **4.2.1.13 Fire Control**

No significant impacts would be expected.

### **4.3 Cumulative Impacts**

All resource values have been evaluated for cumulative impacts. It has been determined that cumulative impacts would be negligible as a result of the proposed action or alternative.

### **4.4 Monitoring**

No special monitoring needs have been identified for the proposed expansion. A BLM specialist would conduct compliance inspections throughout the construction,

operation, and reclamation of the proposed expansion. All compliance inspections would be documented in the Project case file at the BLM Richfield District office.

# **Chapter 5 - Consultation and Coordination**

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## **5.1 List of Preparers**

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## **5.2 Persons, Groups, or Agencies Consulted**

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**U.S. Department of the Interior**

**Bureau of Land Management**

**Warm Springs Resource Area**

**Filmore, UT**

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**Intermountain Ecosystems, L.C.**

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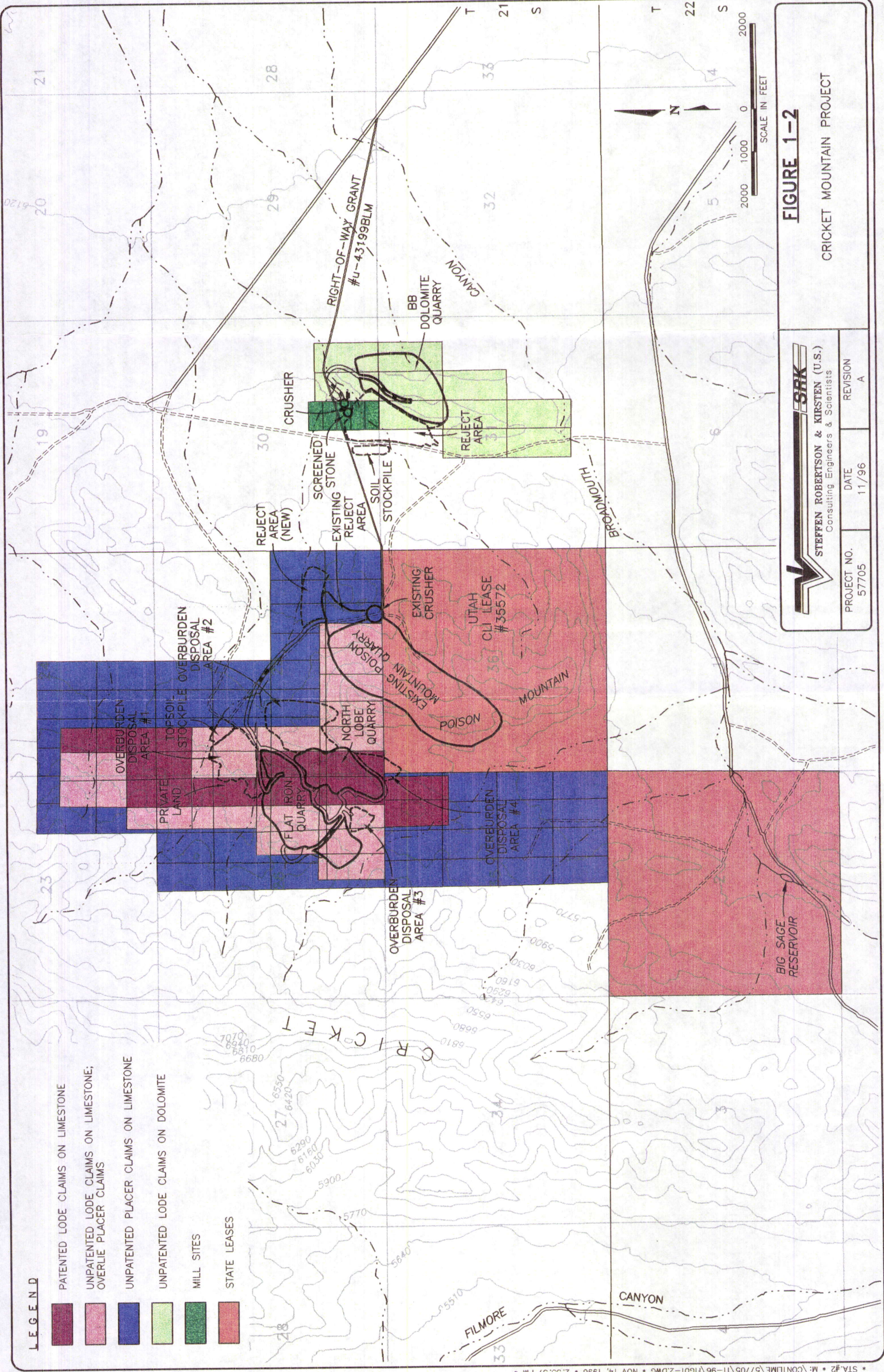
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LEGEND

- PATENTED LODGE CLAIMS ON LIMESTONE
- UNPATENTED LODGE CLAIMS ON LIMESTONE;  
OVERLIE PLACER CLAIMS
- UNPATENTED PLACER CLAIMS ON LIMESTONE
- UNPATENTED LODGE CLAIMS ON DOLOMITE
- MILL SITES
- STATE LEASES

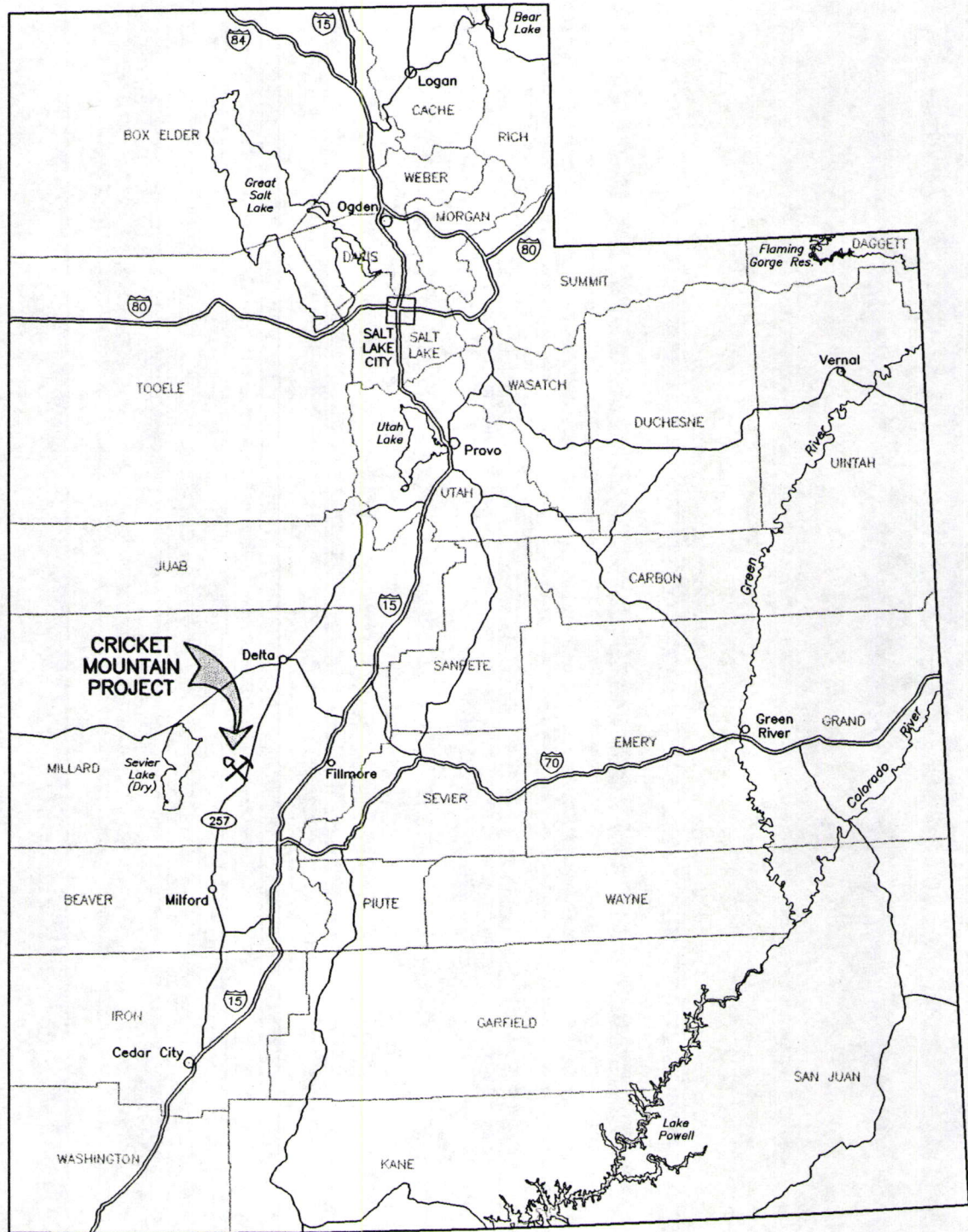


**STEFFEN ROBERTSON & KIRSTEN (U.S.)**  
Consulting Engineers & Scientists

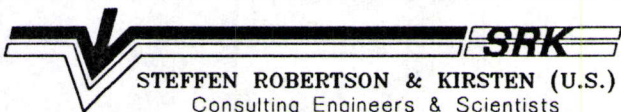
PROJECT NO. 57705	DATE 11/96	REVISION A
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**FIGURE 1-2**  
CRICKET MOUNTAIN PROJECT





U T A H



PROJECT NO.  
 57705

DATE  
 07/95

REVISION  
 A

**FIGURE 1-1**

PROJECT LOCATION MAP









LEGEND

AREA TO BE DISTURBED BY A PORTION OF OVERBURDEN DISPOSAL AREA #1 OR BY A POSSIBLE QUARRY EXPANSION.

AREA THAT MAY BE DISTURBED BY A POSSIBLE QUARRY EXPANSION.

PREPARED FOR:  
CONTINENTAL LIME, INC.  
CRICKET MOUNTAIN PROJECT

SCALE: AS SHOWN  
DRAWING NO.:  
**FIGURE 2-2**

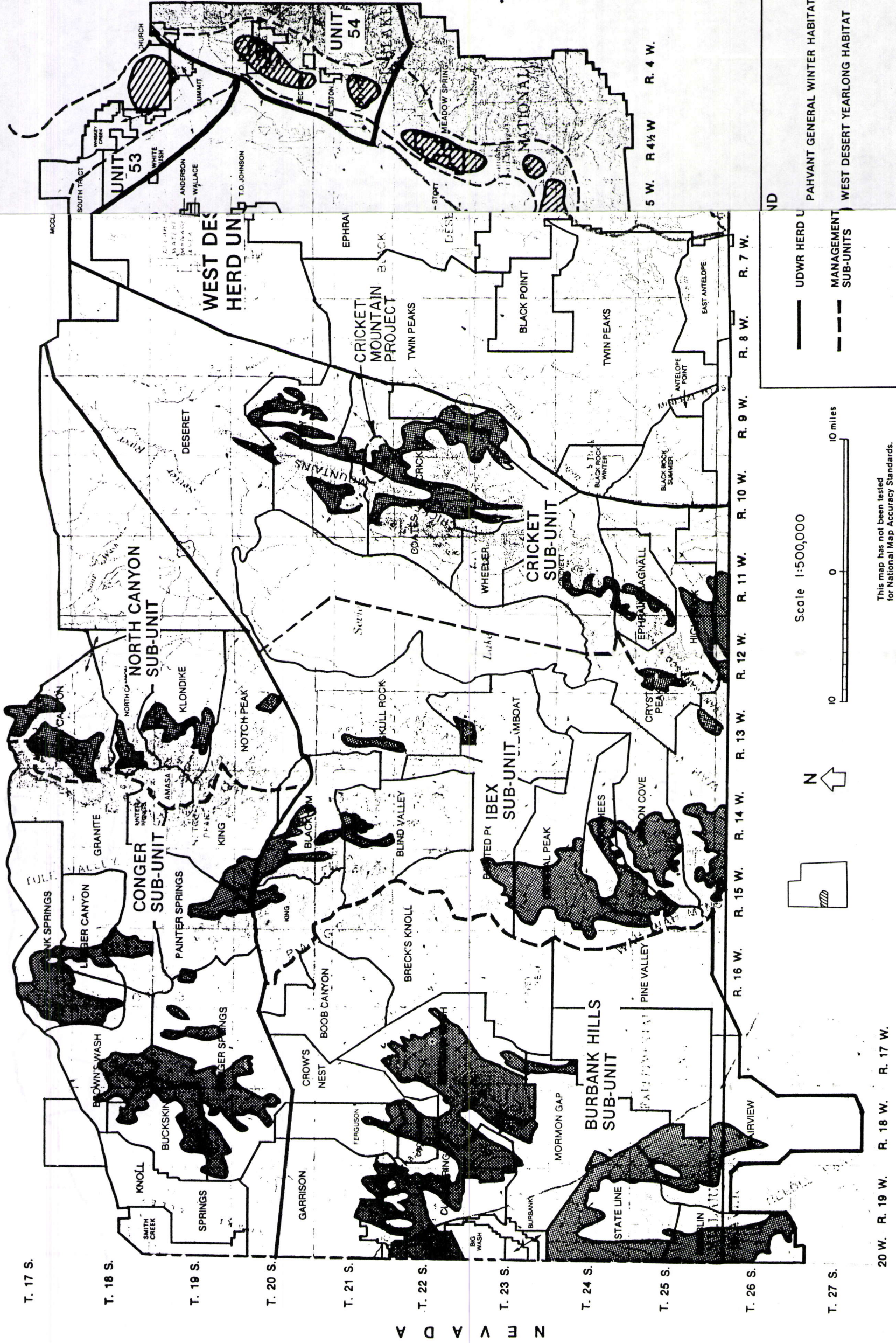
PROJECT No. 57705  
DESIGNED: HW 11/88  
DRAWN: PMW 11/88  
CHECKED: PA 11/88  
APPROVED: PA 11/88

REVISIONS  
NO. DESCRIPTION  
1. ISSUED FOR CLIENT REVIEW  
BY: PA  
DATE: 11/88

REVISIONS  
NO. DESCRIPTION  
1. ISSUED FOR CLIENT REVIEW  
BY: PA  
DATE: 11/88



WEST DESERT HERD UNIT 2



This map has not been tested  
for National Map Accuracy Standards.

FIGURE 3-2

DEER HERD UNIT BOUNDARIES  
AND SIGNIFICANT HABITAT

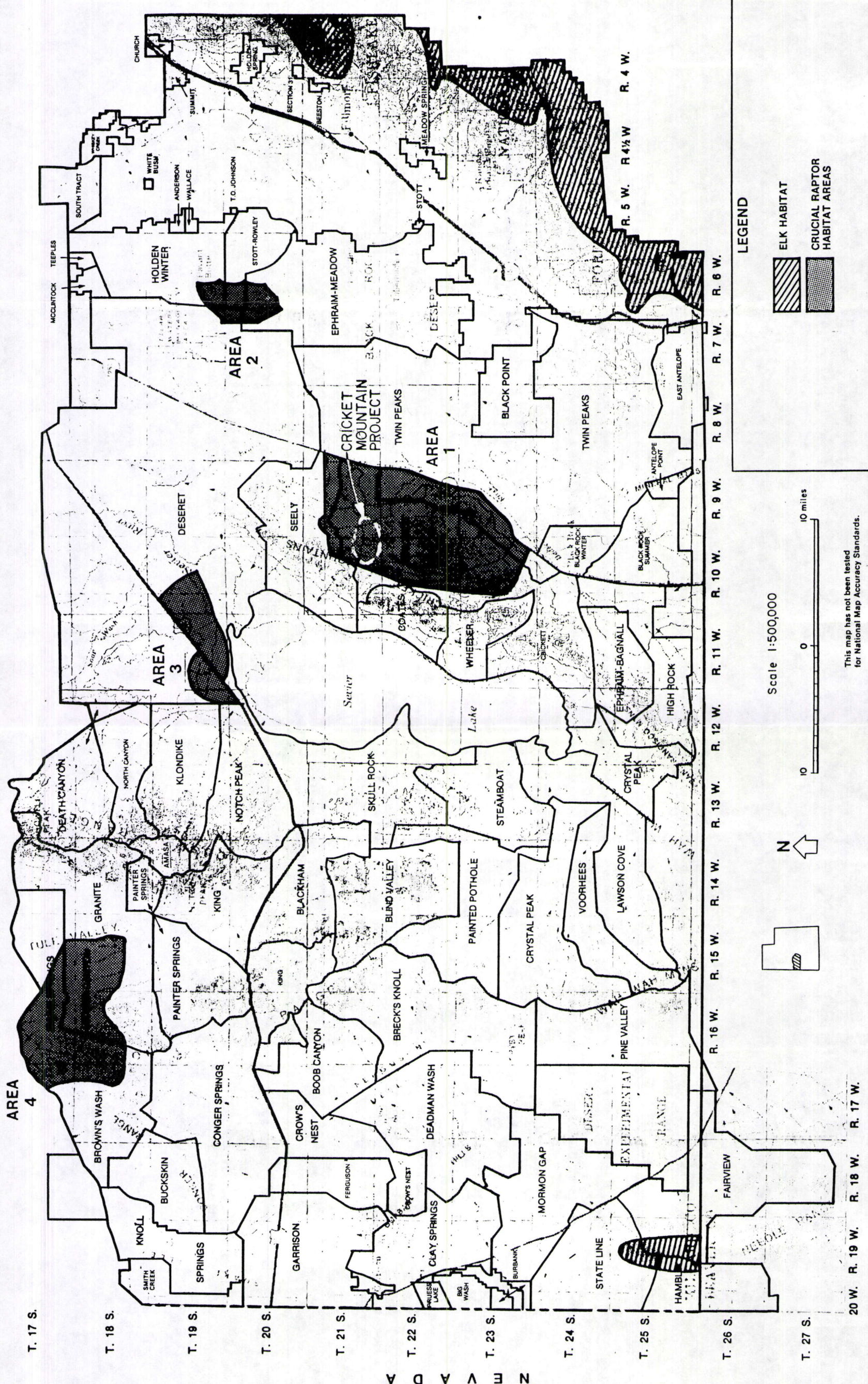


STEFFEN ROBERTSON & KIRSTEN (U.S.)  
Consulting Engineers & Scientists

PROJECT NO.	DATE	REVISION
57705	08/96	A

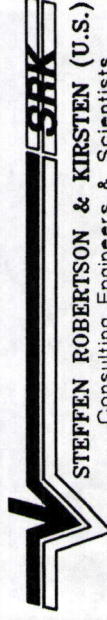
REFERENCE:  
AFTER DRAFT WARM SPRINGS RESOURCE AREA -  
RESOURCE MANAGEMENT PLAN - ENVIRONMENTAL  
IMPACT STATEMENT BY BLM, 1986.





**FIGURE 3-3**

**CRUCIAL RAPTOR AND ELK HABITAT AREAS**

**STEFFEN ROBERTSON & KIRSTEN (U.S.)**  
Consulting Engineers & Scientists

PROJECT NO. 57705	DATE 08/96	REVISION A
----------------------	---------------	---------------

REFERENCE:  
AFTER DRAFT WARM SPRINGS RESOURCE AREA -  
RESOURCE MANAGEMENT PLAN - ENVIRONMENTAL  
IMPACT STATEMENT BY BLM, 1986.



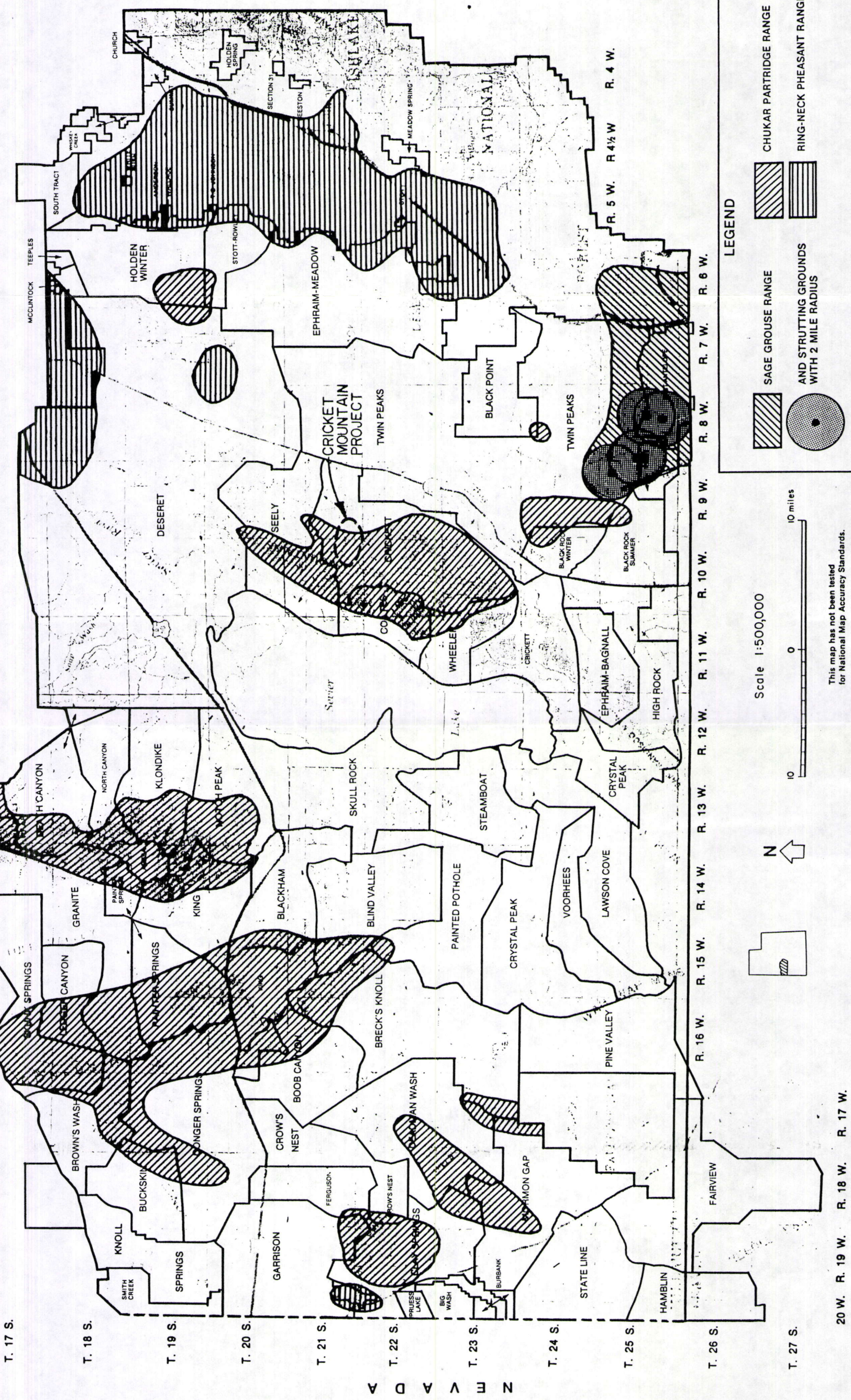


FIGURE 3-4

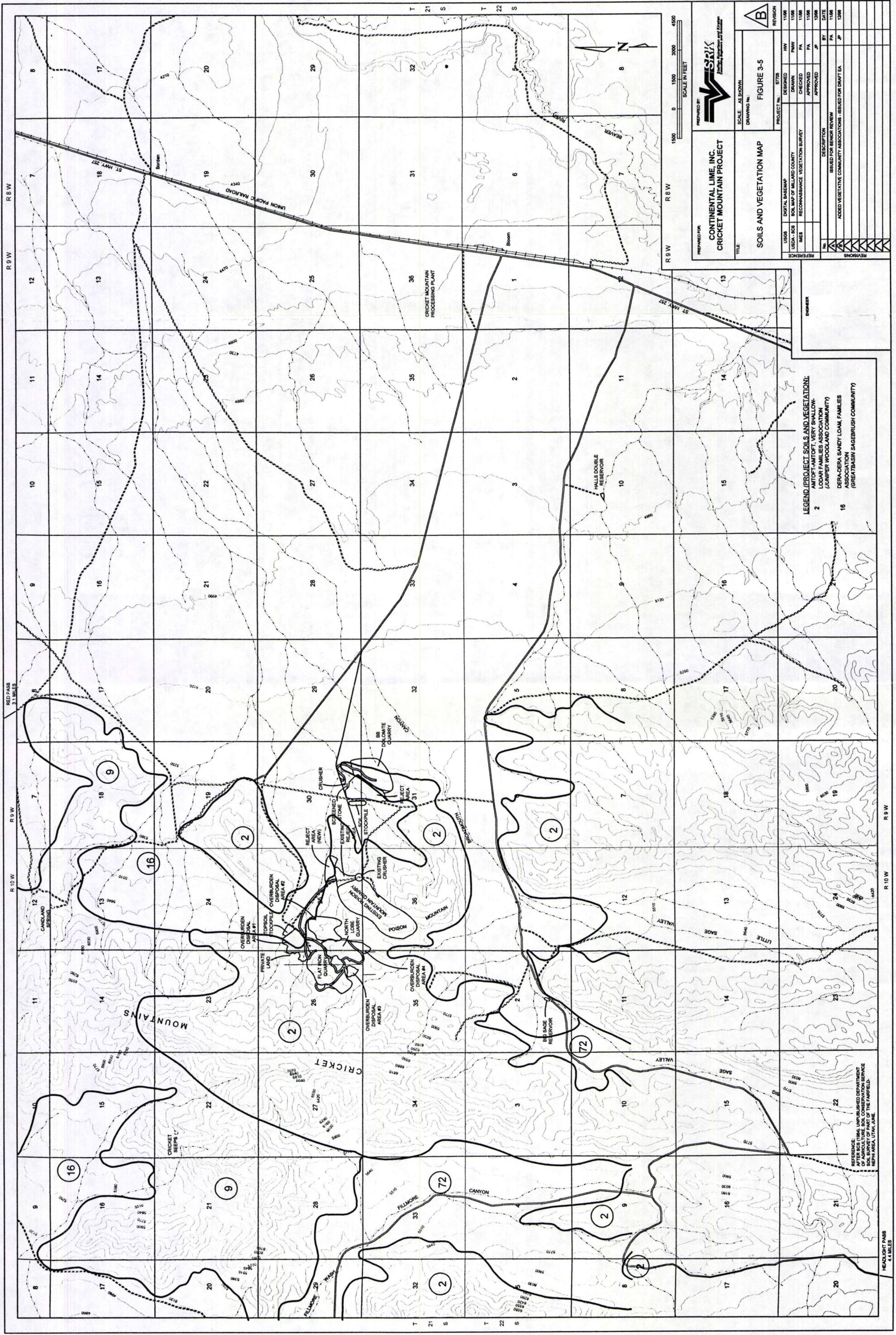
UPLAND GAME BIRD HABITAT

**SRK**  
STEFFEN ROBERTSON & KIRSTEN (U.S.)  
Consulting Engineers & Scientists

PROJECT NO.	DATE	REVISION
57705	08/96	A

REFERENCE:  
AFTER DRAFT WARM SPRINGS RESOURCE AREA -  
RESOURCE MANAGEMENT PLAN - ENVIRONMENTAL  
IMPACT STATEMENT BY BLM, 1986.





PREPARED FOR:  
**CONTINENTAL LIME INC.**  
CRICKET MOUNTAIN PROJECT

SCALE: AS SHOWN  
DRAWING NO.: **FIGURE 3-5**

PROJECT NO.: 5770

REVISION:  
11/08  
DESIGNED: HW  
11/08  
DRAWN: PHW  
11/08  
CHECKED: PA  
11/08  
APPROVED: PA  
11/08  
BY: JP  
12/08  
DATE: 12/08  
DESCRIPTION:  
ISSUED FOR SENIOR REVIEW  
PA  
11/08  
ADDED VEGETATIVE COMMUNITY ASSOCIATIONS - ISSUED FOR DRAFT EA  
JP  
12/08

REVISION	DATE	DESCRIPTION
1	11/08	ISSUED FOR SENIOR REVIEW
2	12/08	ADDED VEGETATIVE COMMUNITY ASSOCIATIONS - ISSUED FOR DRAFT EA

ENGINEER

**LEGEND (PROJECT SOILS AND VEGETATION):**  
2 ANTOFTAMTOFT VERY SHALLOW  
LOAM FAMILIES ASSOCIATION  
(JANIFER WOODLAND COMMUNITY)  
16 DERA-DERA SANDY LOAM FAMILIES  
ASSOCIATION  
(GREAT BASIN SAGEBRUSH COMMUNITY)

REFERENCE: 1986A UNPUBLISHED DEPARTMENT  
OF AGRICULTURE SOIL CONSERVATION SERVICE  
SOIL SURVEY OF PART OF THE FAIRFIELD  
RANGE AREA, UTAH, JUNE

HEADQUARTERS  
4.4 MILES



**SPECIES LIST**  
(Kass, 1996)

COMMON NAME	SCIENTIFIC NAME	ABUNDANCE
<b>Trees</b>		
Utah juniper	<i>Juniperus osteosperma</i>	Common
<b>Shrubs</b>		
Black sagebrush	<i>Artemisia nova</i>	Common
Big sagebrush	<i>Artemisia tridentata</i>	Common
Shadscale	<i>Atriplex confertifolia</i>	Frequent
Winterfat	<i>Ceratoides lanata</i>	Frequent
Needle-leaf mt. mahogany	<i>Cercocarpus ledifolius</i>	Infrequent
Rabbitbrush	<i>Chrysothamnus nauseosus</i>	Frequent
Cliffrose	<i>Cowania mexicana</i>	Common
Nevada ephedra	<i>Ephedra nevadensis</i>	Frequent
Snakeweed	<i>Gutierrezia sarothrae</i>	Common
Pepperweed	<i>Lepidium montanum</i> var. <i>montanum</i>	Common
Littleleaf horsebrush	<i>Tetradymia glabrata</i>	Frequent
<b>Forbs</b>		
Torrey milkvetch	<i>Astragalus calycosus</i> var. <i>calycosus</i>	Infrequent
Rough brickellbush	<i>Brickellia microphylla</i> var. <i>watsonii</i>	Infrequent
Musk mustard	<i>Chorispora tenella</i>	Frequent
Dwarf cryptantha	<i>Cryptantha humilis</i>	Infrequent
Claret cup cactus	<i>Echniocereus triglochidatus</i>	Frequent
Vernal daisy	<i>Erigeron pumilus</i> var. <i>concinoides</i>	Infrequent
Cushion buckwheat	<i>Eriogonum ovalifolium</i> var. <i>ovalifolium</i>	Infrequent
Storksbill	<i>Erodium cicutarium</i>	Frequent
Halogeton	<i>Halogeton glomerata</i>	Common
Low goldenbush	<i>Haplopappus nanus</i>	Frequent
Hyalineherb	<i>Hymenopappus filifolius</i>	Frequent
Stemless woollybase	<i>Hymenoxys acaulis</i>	Infrequent
Sharp slenderlobe	<i>Leptodactylon pungens</i>	Frequent
Milfoil lomatium	<i>Lomatium grayii</i>	Frequent
Prickly-pear cactus	<i>Opuntia polycantha</i>	Frequent
Stansbury rock-daisy	<i>Perityle stansburiana</i>	Frequent
Rock spirea	<i>Petrophytum caespitosum</i>	Common
Desert phlox	<i>Phlox austromontana</i>	Infrequent

## SPECIES LIST (continued)

COMMON NAME	SCIENTIFIC NAME	ABUNDANCE
<b>Forbs (continued)</b>		
Tumbleweed	<i>Sasola pestifer</i>	Frequent
Globemallow	<i>Sphaeralcea grossulariifolia</i>	Common
Showy townsendia	<i>Townsendia florifer</i>	Infrequent
<b>Grasses</b>		
Squirreltail	<i>Elymus elynoides</i>	Common
Intermedium wheatgrass	<i>Elymus hispidus</i>	Infrequent
Salina wheatgrass	<i>Elymus salinus</i>	Common
Purple threeawn	<i>Aristida purpurea</i>	Frequent
Cheatgrass	<i>Bromus tectorum</i>	Common
Galleta	<i>Hilaria jamesii</i>	Frequent
Muttongrass	<i>Poa fendleriana</i>	Infrequent
Sandberg bluegrass	<i>Poa sandbergii</i>	Frequent
Needle and thread	<i>Stipa comata</i>	Frequent
Indian ricegrass	<i>Stipa hymenoides</i>	Common

**SENSITIVE SPECIES  
INVENTORY RESULTS**  
(Kass, 1996)

**ASTRAGALUS UNCIALIS BARNEBY**

**Family:** Fabaceae

**Common name:** Inch-high milkvetch

**Status:** Species at risk

**Original citation:** Barneby, R. P. 1942. Leaflets of Western Botany 3:101. Type: Ripley and Barneby, northeastern Nye County, Nevada, 5300 ft., 22 May 1941.

**Habitat and phenology:** Dry knolls and slopes, saline sands or clays usually with desert pavement. Shadscale and budsage communities at elevations of 1402-1615 meters (4600-5300 ft.). Flowering time is April and May.

**Historic distribution:** Northern Nye County, Nevada, and about 30 miles southwest of Delta Ut. at Long's Ridge.

**Inventory findings:** Marginal desert pavement was present around Topsoil Stockpile #2 but inch-high milkvetch was not found. Low potential habitat exists in the surrounding areas.

**ERIOGONUM NUMMULARE JONES VAR. AMMOPHILUM (REVEAL) WELSH**

**Family:** Polygonaceae

**Common name:** Ibex buckwheat

**Status:** Species at risk

**Original citation:** Reveal, J. L. 1972. Phytologia 23:163. Type: Ibex Warm Point, Confusion Range, Millard Co. Ut. Homlgren & Holmgren 4650.

**Habitat and Phenology:** This plant occurs on aeolian sands in salt desert shrub and pinyon-juniper zones. Elevation range is 1585-1890 meters (5200-6200 ft.). Flowering time is June and July.

**Historic distribution:** Tule, Whirlwind, and Snake Valleys; Ferguson Desert, Millard and Juab Counties, Ut.

**Inventory findings:** No sandy areas exist in the project area, therefore, Ibex buckwheat was not found.

### **CRYPTANTHA COMPACTA HIGGINS**

**Family:** Boraginaceae

**Common name:** Compact cateye

**Status:** Species at risk

**Original citation:** Higgins, L. 1968. Great Basin Naturalist 28:196-97. Type: Millard Co., Utah. 8 miles W. of the Desert Experiment Station, (Higgins 1613).

**Habitat and phenology:** Dry open slopes, rock outcrops, and barren clay soils in mixed desert shrub, pinyon-juniper, and mountain shrub zones. Elevation range is 1350-2900 meters (4428-9512 ft.). Flowering time is May and June.

**Historic distribution:** Desert Experiment Range, Millard County.

**Inventory findings:** *Cryptantha humilis*, a near relative of *C. compacta*, was found at the BB Dolomite Quarry, but *C. compacta* was not located.

### **PENSTEMON CONCINNUS KECK**

**Family:** Scrophulariaceae

**Common name:** Tunnel Springs beardstongue

**Status:** Species at risk

**Original citation:** Keck, D. 1940. American Midland Naturalist 23:608. W. P. Cottam, 5635. Type: Tunnel Springs, ca 10 miles E. of Garrison, 1675 meters elev., Millard Co., Ut. 28 June 1933.

**Habitat and phenology:** Gravelly bluffs, limestone and dolomite outcrops in mixed desert shrub, sagebrush, and pinyon-juniper zones. Elevation range is 2047-2460 meters (6240-7500 ft.). Flowering time is June.

**Historic distribution:** Tunnel Springs, Mountain Home, Burbank Hills and Wah-Wah Mountains; Millard and Beaver Counties, Utah; Snake Range, White Pine Co., Nevada.

**Inventory findings:** Tunnel Springs beardstongue was not found in the project area.

**SPHAERALCEA CAESPITOSA JONES**

**Family:** Malvaceae

**Common name:** Jones globemallow

**Status:** Species at risk

**Original citation:** Jones, M. E. 1908. Contributions to Western Botany 12:4.

**Habitat and phenology:** Restricted to limestone and dolomites slopes, especially the Sevy Dolomite Formation in salt desert shrub and pinyon-juniper zones. Elevation range is 1524-1981 meters (5000-6500 ft.). Flowering time is June-July.

**Historic distribution:** Desert Experiment Range, Millard County, Ut.

**Inventory findings:** Jones globemallow was not found in the project area but potential habitat exists on limestone and dolomite outcrops.